EPA & Hydraulic Fracturing - Dec. 15 to 20

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12/20/2012	BRIGGS: We Got Clean Ersters Here, Y'all!	Hayride, The
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12/18/2012	More On Anticipated EPA Fracking Study	Before Its News
12/18/2012	EPA URGED TO EXPAND FRACKING STUDY'S FOCUS ON WASTEWATER DISPOSAL RISKS	Inside EPA Weekly Report
12/18/2012	EPA Urged To Expand Fracking Study's Focus On Wastewater Disposal Risks	Inside EPA Weekly Report
12/18/2012	Hinchey Thanks Constituents at Last Official Stops in Orange and Ulster	Utility Products Magazine - Online
12/18/2012	PSEHE: Where Ideology Trumps Reality	Forbes - Online
12/17/2012	Colorado Oil And Gas Industry Under Pressure As Protests Mount	Huffington Post, The
12/17/2012	Resources for Unconventional Gas and Hydraulic Fracturing	Environmental Law Professors
12/17/2012	EPA Slated To Provide Early Look At Draft Fracking Study,	Inside EPA Weekly Report
12/17/2012	More On Anticipated EPA Fracking Study	Center For Environment, Commerce & Energy
12/17/2012	$90 Billion U.S. Investment Spurring Shale Gas 'Revolution'	Breitbart.com
12/17/2012	Hydraulic Fracturing	Environmental Protection
12/16/2012	Energy experts say drilling can be made cleaner	Austin American-Statesman - Online
12/16/2012	2012's Forgotten Story	Swans Commentary
12/16/2012	2012's Forgotten Story	Swans Commentary
12/16/2012	Energy experts say drilling can be made cleaner	Abilene Reporter-News - Online
12/16/2012	Overnight News Digest: Science Saturday (Two Higgs Bosons? edition)	DAILY KOS
12/15/2012	What Could Go Wrong for U.S. Energy in 2013?	DailyFinance
12/15/2012	Energy experts say drilling can be made cleaner	Daily Herald - Online
12/15/2012	Deep disposal well fight comes to small town	Statesman Journal - Online
12/15/2012	Deep disposal well fight comes to small town	Jackson Sun - Online
12/15/2012	Deep disposal well fight comes to small town	Journal News - Online
12/15/2012	Deep disposal well fight comes to small town	Daily News Journal - Online, The
12/15/2012	Deep disposal well fight comes to small town	Cincinnati Enquirer - Online

12/15/2012	Deep disposal well fight comes to small town	News Leader - Online, The
12/15/2012	Deep disposal well fight comes to small town	Daily Journal - Online, The
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12/15/2012	Is it despair or hope emanating from Qatar climate conference?	Kennebec Journal - Online
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Weekly News Bulletins
Waste Business Journal

12/20/2012

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Groups Want EPA to Expand Study of Wastewater from Fracking Disposal Risk

Environmental groups want EPA to expand its study of wastewater disposal from hydraulic fracturing (fracking) to include disposal in underground injection wells, where at least 90 percent of disposal occurs. Its current study is only concerned with releases to treatment facilities. Their concern is that produced water discharges from fracking operations contain a host of pollutants that are contaminating surface water resources and that research would bolster their case for EPA to strengthen its disposal rules for wastewater from oil and gas drilling operations, which is currently exempt from strict hazardous waste disposal requirements. The exemption allows disposal in less-regulated Class II wastewater disposal wells, rather than more strictly regulated Class I wells.

To learn more, visit: www.epa.gov/hfstudy/.

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Hinchey Thanks Constituents at Last Official Stops in Orange and Ulster
Utility Products Magazine - Online

12/20/2012

Office of the House of Representative Maurice Hinchey, U.S Government has issued the following news release:

Retiring Congressman Maurice Hinchey (D-NY) today continued his final tour throughout New York's 22nd Congressional District. In visits with constituents and local officials in Kingston and Newburgh, Hinchey discussed his many accomplishments, but the primary reason for his visit was to say thank you to the area residents he has represented over the past 20 years. Hinchey will officially leave office on January 3, 2013 at noon.

"Despite all the battles won and lost, I wanted to be here today to say thank you to all of you who stood with me as we took on the big fights," said Hinchey. "For these reasons and many others, I am very proud to have represented you in Congress, proud to call you my friends, and proud of what we have accomplished together. You stood with me every step of the way. For that I thank you from the bottom of my heart. I look back on my life in public service proud of what we accomplished together, regretful that I could not do more and hopeful that you will pick up where I left off, and continue the fight for this region and for what is right."

In Kingston, Hinchey reflected on his career in the New York State Assembly, where he led an investigation into organized crime's control of the waste hauling industry, championed efforts to clean up love canal and passed legislation to control acid rain. Hinchey also talked about his long-term effort to rid the Hudson River of PCB contamination -- a fight which he continued in Congress. Hinchey is also proud of creating the Hudson River Valley Greenway, and later the Hudson River Valley National Heritage area -- designations which have increased tourism and access to state and federal resources.

The retiring Congressman also noted his work to restore several local historic landmarks including Kingston City Hall, the Old Dutch Church, Sam's Point, and the Kingston Rondout Waterfront Promenade. Hinchey, who also delivered millions in federal investments to strengthen local infrastructure, pointed to wastewater projects along the Kings Highway corridor and streetscape improvements in Saugerties. The Walkway Over the Hudson, which is seen as one of the Congressman's greatest successes, was jump started by a $1.3 million in federal investment Hinchey secured. Hinchey also pointed to his work to establish The Solar Energy Consortium (TSEC), which has created 600 energy-related jobs with many more on the way.

In Newburgh, the Congressman talked about legislation he introduced early in his career with Senator Daniel Patrick Moynihan to convert 400 miles of Route 17 into federal Interstate 86. The associated projects have created hundreds of jobs. Other Orange County investments discussed by Hinchey include the New York Renewable Energy Cluster, which established a strategic partnership between TSEC, SUNY Orange and Gateway to Entrepreneurial Tomorrows to create new jobs, develop small businesses and spur economic revitalization. Hinchey also discussed his work to prevent the outsourcing and privatization of jobs at West Point, and federal funding he secured to initiate upgrades at Stewart Air National Guard Base.

On the big national issues, Hinchey said he always tried to stand up for what he believed was right, even though it was not always popular. Hinchey pointed to his opposition to the invasion and occupation of Iraq, votes against the deregulation of Wall Street that led to the 2008 financial collapse, and votes against unfair trade deals like NAFTA that caused the exportation of millions of manufacturing jobs. "Instead of listening to the lobbyists, I listened to the people," he said. "Instead of standing with my political party, I stood with the New Yorkers I was sent to represent."

A comprehensive list of Hinchey's achievements as member of the New York State Assembly and U.S. House follows:

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• Under Hinchey's leadership as Chairman of the Environmental Conservation Committee, the panel conducted a successful investigation into the causes of "Love Canal," the nation's first major toxic dumpsite, and developed landmark environmental legislation including the nation's first law to control acid rain.

• Between 1982 and 1992, Hinchey led an investigation into organized crime's control of the waste-hauling industry that led to the conviction of more than 20 criminal figures, including one for murder.

• Hinchey successfully led the fight, first in Albany and later in Washington, to force General Electric to pay for and clean up the 1.3 million pounds of PCBs it dumped into the Hudson River between 1947 and 1977. Dating back to his days as Chair of the State Assembly's Environmental Conservation Committee, Hinchey fought against numerous attempts to delay and narrow the clean-up process, and he worked tirelessly to make sure the U.S. Environmental Protection Agency held GE responsible for the cleanup. In 2011, Hinchey visited the upper Hudson River to laud the commencement of the second and final phase of the cleanup as a critical step forward in removing PCB contamination that has plagued the Hudson River for many decades.

• As an assemblyman, Hinchey developed the statewide system of Urban Cultural Parks, including those in Kingston and Binghamton and authored the legislation that created the Hudson River Valley Greenway. He built on this accomplishment later, as a member of Congress, by writing and championing the passage of legislation that created the Hudson River Valley National Heritage Area, giving the region national prominence as well as access to increased federal resources.

• In his first year in Congress, Hinchey helped to initiate and spearhead the successful legislative effort to preserve more than 15,000 acres in Sterling Forest, the last significant area of open space in the New York metropolitan region and an important watershed for southeastern New York and northern New Jersey.

• As a member of the House Banking Committee, Hinchey's pointed and persistent questioning of Alan Greenspan forced the Federal Reserve Board Chairman to admit to the existence of taped recordings of the meetings of the Federal Open Markets Committee (FOMC), the board's policy making body. As a result, the public now has direct insight into the thinking of the FOMC, and the logic behind the decisions affecting interest rates and other important economic policies.

• In 1993, Hinchey and the late Senator Daniel Patrick Moynihan authored legislation designating New York's Route 17 as Interstate 86, in order to bring increased economic activity to the Southern Tier and Catskills regions. After their legislation was passed as part of the 1998 Building Efficient Surface Transportation Equity Act for the 21st Century (BESTEA-21), the 381 mile stretch of Route 17 was set on a path to becoming I-86, making it eligible for a wide array of new federal funding. The conversion of Route 17 to I-86 will eventually provide a federal interstate connection from I-90 at Erie, PA to I-87 at Harriman, NY. The New York State Department of Transportation is currently planning a major reconstruction project for Prospect Mountain in Binghamton, New York, which will create more than 200 jobs.

• In 1999, Hinchey succeeded in passing an amendment that required the CIA to report to Congress on its involvement in the 1973 coup of Chile's democratically elected President, Salvador Allende. Following the coup, President Allende was assassinated and General Augusto Pinochet began his 17-year dictatorship. The report, now known as the Hinchey Report, makes a clear case that the United States - at the very highest levels of government - was deeply involved in the destabilization of Chile's government and economy over a period of nearly 20 years.

• In 1999 and 2000, Hinchey successfully secured emergency assistance for U.S. apple farmers who suffered severe weather-related crop damage. Without this emergency aid, many apple farms in New York would have been lost.

• As a member of the House Appropriations Committee, Hinchey has secured billions of dollars in federal aid to spur job growth, improve public infrastructure, advance education and the arts, improve health care facilities and services, and

support economic development in local communities throughout the congressional district he represents in a wide array of ways.

• Hinchey provided early and key support for the revitalization of the old Poughkeepsie Railroad Bridge by drawing attention to its potential and securing the first public funds for what would eventually become the Walkway Over the Hudson. Overall, the congressman directly secured $1.34 million in federal funding for the project and helped deliver an additional $2.4 million through the 2008 American Recovery and Reinvestment Act. The federal money combined with state and private contributions, namely through Robert Dyson's Dyson Foundation, were used to create what has become the world's longest pedestrian/bicycle bridge. The Walkway has attracted more than 1.2 million visitors since opening to the public in 2009.

• Hinchey was one of the first and most outspoken members of Congress to oppose President Bush's effort to invade Iraq. He subsequently became a forceful critic of ongoing operations within Iraq and led the call for the removal of U.S. forces, which has now occurred.

• Hinchey led the congressional outcry against the NSA's warrantless surveillance program that was instituted under President Bush. He requested, and helped successfully secure, the launch of an independent Department of Justice probe to determine any wrongdoing.

• In 2007, Hinchey led the effort to establish The Solar Energy Consortium (TSEC) -- a not-for-profit entity in upstate New York that brings together private solar companies and research institutions throughout the state to develop new ways to efficiently and effectively develop economically viable solar technologies. The results have been extraordinary. Hinchey and TSEC have attracted numerous companies to upstate New York and helped create more than 600 solar energy-related jobs with many more on the way.

• Hinchey is the primary leader in Congress to protect drinking water and the environment from the risks of hydraulic fracturing. He is a co-author of the FRAC Act, which would mandate public disclosure of chemicals used in fracking fluid and allow the EPA to regulate fracking activities under the Safe Drinking Water Act.

• In 2009, Hinchey authored the appropriations language that initiated the EPA's current national study on hydraulic fracturing. This is the first comprehensive and independent analysis of the risks that hydraulic fracturing poses to drinking water.

For further information please visit: http://hinchey.house.gov

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BRIGGS: We Got Clean Ersters Here, Y'all!
Hayride, The

12/20/2012

The oil and gas industry has been working through many different important issues over 2012 such as hydraulic fracturing regulations, new EPA rules and water concerns to name but a few. However, a recent study, brought to light by the Times Picayune, did catch my attention regarding oysters and how they were affected by the 2010 oil spill in the Gulf of Mexico. This study claims oysters were disturbed very little as a result of the spill.

The study released by a University of New Orleans oyster biologist, Thomas Soniat, discovered that the oysters at oil-exposed areas in Louisiana revealed no contamination or biological implications of exposure six months beyond the 2010 oil spill.

According to another paper published by Environmental Science and Technology, the research doesn't imply that the oysters were not exposed to oil, but rather that the oysters simply consumed very little oil if any at all. The paper continues to say that while the spill was thought to have transformed the Gulf of Mexico ecosystem for the long term, it has been "difficult to quantify due to the physical setting, offshore application of dispersants, potentially rapid microbial degradation and low detection rates for affected organisms". Restating this in clear English, the negative long-term outcome on the ecosystem and the Gulf as a result of the 2010 spill has been hard to identify and quantify.

Another group of researchers from Alabama's Dauphin Island Sea Lab, marine scientist Ruth Carmichael and her colleagues, stated in in the Times Picayune article of how they are not positive as to "whether the local oysters simply avoided eating oiled material in their surrounding or whether there simply was not much oiled material around them". The bottom line remains the same; the local oyster population within the spill zone, according to numerous researchers, consumed very little oil or dispersants.

The consumption level by the consumers of seafood in general fell drastically following the spill. As with any chemical spill, it is wise to take precautions regarding whether the spill reached the water or food supply in any capacity. Whether there is proof of contamination or not, due to the mass scale of the spill and the 24 hour news coverage the spill received for several months, it has been difficult for the seafood industry to move forward.

What do these studies have to do with the oil and gas industry? For going on three years, the oyster industry has formed task forces and has been holding lengthy meetings to determine the extent of the damage the spill has caused on the oyster industry. The more damages that the oyster industry can prove happened as a result of the spill, the more they can demand in financial restitution from the industry, BP specifically. Currently, there has been an Oyster Compensation Fund set up that pays out according to acreage and location of acreage.

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This article is not to say that BP and other responsible parties are not liable for the damage they have caused by the accident, but it is important to listen to these biologist and researchers who truly understand the intricate make-up of these resilient critters, such as the oyster is proving to be.

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NJ Bill Would Extend Ban On Fracking Until EPA Report
Law360

12/19/2012

NJ Bill Would Extend Ban On Fracking Until EPA Report

By Nathan Hale

Law360, New York (December 19, 2012, 7:20 PM ET) -- A New Jersey assemblyman is sponsoring legislation to extend a state ban on hydraulic fracturing for natural gas until the state environmental commissioner has the chance to review a federal study on the impact of the controversial drilling method on the water supply.

Republican Declan O'Scanlon, who represents Monmouth County along the shore, is proposing to extend a one-year moratorium signed by Gov. Chris Christie that is set to expire next month. O'Scanlon did not immediately respond to a request for comment Wednesday.

The extended moratorium...

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Air Pollution Control for Coal-Fired Power Plants
WPFO-TV - Online

12/19/2012

SOURCE Reportlinker

NEW YORK, Dec. 19, 2012 /PRNewswire/ -- Reportlinker.com announces that a new market research report is available in its catalogue:

http://www.reportlinker.com/p0118041/Air-Pollution-Control-for-C oal-Fired-Power-Plants.html#utm_source=prnewswire&utm_medium=pr&utm_campaign=Coa l_energy

INTRODUCTION

The United States and the rest of the industrialized world continue to struggle with the global economic slowdown that persists from the economic collapse that resulted from the bursting of the housing and banking excess bubble in 2008. Further complicating the situation is the political gridlock in the United States Congress, which increased after Republicans took control of the Congress after the 2010 midterm election. With a Democratic president and a Republican Congress unwilling to take any action that could help him, legislative action essentially stopped before the 2012 election. Not much has been enacted since the 2010 mid-term election.

Pollution controls for coal-fired power plants are expensive, as we shall discuss in this report, and power companies are loath to spend money on such controls, since they not only cost money and contribute nothing to power generation but also can use power and resources that private utility companies would prefer to spend elsewhere or take as profits. Thus, such expenditures for capital additions and operating costs for pollution control devices will ordinarily be made only when mandated by government laws and resulting regulations. Republicans as a rule oppose such regulations and controls on private industry, while Democrats are usually more sympathetic to regulation, especially environmental regulation that can improve public health and safety. The current gridlock in Washington, DC virtually guarantees that little will be done in the near future.

Along with the general and widespread problems and concerns over national debts, economic growth or decline and unemployment, there are two other and different pertinent economic and technical areas, which with the countries of the world (and the entire global economy) are currently struggling with and seeking solutions. These are energy supplies and the environmental consequences of exploiting those supplies.

Energy can be supplied from a number of different sources. Today most of the world's energy is derived from so-called "fossil fuels," the products of millennia of decay of animal and vegetable matter. The three primary fossil fuels are crude oil, natural gas and coal and all three have been exploited vigorously.

Crude oil has several advantages in that it is liquid (although often so viscous that it hardly seems liquid) and is rather easily and economically transported around the globe and across land and sea. Crude oil is refined using known technologies to produce a number of different products, ranging from light gases to liquid fuels to heavy oils and asphalts. It is in high demand for its ease of use and its number of applications. Crude oil, coming in large part from countries and regions not known for stability such as the Middle East, Russia and Venezuela, has been on a price roller coaster for the past several years. In 2008 the price of crude oil more than doubled in less than a year for no known physical or supply reasons except that developing countries, especially China and India, started using and seeking far greater quantities of oil than in the past. However, no sooner had crude oil prices peaked at close to $150/bbl than the price bubble burst and prices dropped in 2009 to around $40. More recently crude prices have increased to over $100/bbl, with recent prices

somewhat below that as world economic activity appears to be slowing down.

Natural gas has always had one principal advantage: it is the cleanest burning of the fossil fuels, an important environmental factor. In the United States its demand has increased, originally as tougher environmental controls on power plants moved many utilities and other power producers to either switch to natural gas or build new power plants that burn it. More recently, the rapid expansion of natural gas production by hydraulic fracturing ("fracking") of natural gas shale formations has produced a glut in the U.S. with prices at historic lows. This has led to faster and greater movement by the electric power industry to gas-fired power plants. Natural gas has one big disadvantage compared to crude oil; that is, it is gaseous-a unit of energy (such as a BTU or a joule) of a gas takes up much more space than a liquid. Transporting natural gas over large distances requires a much greater investment than that to transport an energy-equivalent quantity of crude oil. There are solutions, such as liquefying the gas with cold, pressure, or both for smaller-volume transport and building power and other gas-using plants near gas fields. But a lot of current natural gas is considered "stranded" in remote places like Siberia, and a lot of it is flared into the atmosphere. This is not much of a problem in the U.S., with its extensive gas pipeline network.

Coal, the third fossil fuel, is important principally to date as a fuel for the generation of electricity. Being solid, it is not easily adapted for use as a transportation fuel unless it is chemically converted to a combustible gas or liquid; more later on so-called coal-to-liquid (CTL) technologies. Thus, coal is used today in the United States primarily for electrical power generation, and coal-fired power generation is the subject of this study and report.

Global energy supplies were, until very recently, exploited and used around the world with little concern about the future. Most usage was in developed nations and most conspicuously in the United States, which has about 5% of global population but has used up to 35% of global energy supply. The world's energy supplies are used in a number of different application areas, such as transportation, power generation, heating and others.

The environmental consequences of burning fossil fuels were essentially ignored for many years from the start of the Industrial Revolution. Stories of the "black satanic mills" of the British industrial midlands of the 19th century abound in literature. As the world's population grew and demand for power and industrial goods grew, the effects of all this fossil fuel burning became more apparent from increased smog, respiratory problems, dying trees, acid rain and other effects. It also caused increasingly political and economic considerations for governments, industry and the public. These consequences show up in different ways, some obvious such as visible tailpipe and smokestack emissions, others less visible in the form of unseen toxic and other environmentally unfriendly gases and both liquid and solid wastes.

And now the problem of global warming is taking center stage, adding more urgency to the quest for new and/or better solutions to pollution from fossil fuel burning. One aspect of this overall global problem, that of control of air pollution from coal-fired power plants, is the focus and subject of this report.

For decades, the U.S. has relied on coal-fired electric-generating plants as the foundation of its central power system. Until quite recently, about half the electricity generated in the U.S. came from burning coal. This percentage is continually dropping as power companies either retire older coal-fired plants or convert to natural gas; in 2011, the percentage was down to about 42%. Utilities buy and use about 90% of the coal mined in the United States.

Coal is a very complex material. As we discuss later, fossil fuels vary depending on their geographical origin. Thus, there are different types of coal, crude oil and natural gas, varying in chemical composition. "Coal" is a generic term for a great number of mixtures of often large and complex organic compounds, usually also containing metals and other contaminants. Burning coal generates a lot of other emissions besides carbon dioxide and water, the normal products of organic oxidation.

Because of these emissions, coal has received a lot of criticism as a power-generation fuel source because of its contribution to air pollution. Air emissions standards, constantly under study and discussion in universities, utilities and

government, have resulted in a re-evaluation of coal as a fuel source and the development of new technologies for reducing plant emissions. With deregulation of the utility market and the continual increase in the nation's energy requirements, the need for cost-effective and environmentally compliant technologies also increases.

This BCC Research report analyzes the trends and developments in the changing U.S. market for air pollution control technologies for coal-fired power plants. The report provides an overview of the coal-based power industry, including history, key regulations, types and characteristics of plant emissions, types of emission-control technologies, industry structure and future trends. Market estimates and forecasts are included for equipment to control the current major air pollutants from coal-fired power plants. Because of the very political nature of this business, our market analyses, estimates and forecasts are not at all precise, since experts and policy makers disagree about both the size and growth rate of the current and potential market.

This study focuses primarily in the United States but also has some international observations, given the global nature of business and technology these days when no nation or region can operate without consideration of the rest of the world. However, our focus is on the United States.

REASONS FOR DOING THE STUDY

During recent years, increasing emphasis has been placed on the development of air pollution control technologies that will allow the continued use of coal as an energy source while meeting the stringent requirements of the Clean Air Act Amendments (CAAA) of 1990 and subsequent legislation and regulations. The report is designed to provide information of a professional nature and the technical data are dependent on the accuracy of data provided by manufacturers, researchers and government sources that we covered in our research. We have sorted through, organized and condensed information from a large amount of literature and other reference materials to compile this report. The report is not intended to be an endorsement of any energy source, company or technology.

CONTRIBUTIONS OF THE STUDY AND FOR WHOM

The report should be valuable and essential for vendors, research and development organizations, investors and engineering and construction firms who are faced with complex business decisions involving the future directions of energy development. It will also prove to be valuable to government agencies, legislators, policymakers and other stakeholders.

SCOPE AND FORMAT

The report provides an analysis of the market for air pollution control technologies and equipment for both utility and non-utility coal-fired power plants. It includes technologies designed for retrofitting existing plants to meet new standards, as well as technologies for repowering existing facilities and for new plant construction. The report characterizes the types of air emissions associated with coal-based power systems and the key regulations that drive technology requirements. It evaluates the current R&D status and effectiveness of control technologies for sulfur dioxide (SO2), nitrogen oxides (NOx), particulate matter (PM) and so called hazardous air pollutants (HAPs, or "air toxics"). The primary emphasis for HAP control at this time is on mercury emissions.

Since carbon dioxide (CO2) is not a toxic substance in the chemical and environmental control sense, it is not in the scope of this study even though there are current measures being taken to call it a pollutant for its greenhouse gas properties. We do discuss some of the current discussions regarding carbon dioxide capture and sequestration, but do not attempt to estimate and forecast such markets since they do not yet really exist at this time (and, since CO2 is not a toxic air pollutant, these markets are outside our scope).

The market analysis section in this report provides a detailed analysis and estimates of the markets in base year 2012

and five-year market forecasts for year 2017 for each major technology. Because of the extreme uncertainties in these times, both economic and political, we use a simple scenario analysis to estimate and forecast these markets. Any market estimates these days, especially in politically sensitive regulated arenas, are very speculative, and ours are no exception.

This report consists of eight narrative chapters, of which this is the first, plus an appendix with a glossary of important terms. The narrative and market analysis chapters that follow are:

The Summary is next and encapsulates our findings and conclusions, including a summary market table. It is the place where busy executives can find the major findings of the study in summary format.

Next is an Overview to the coal-based power industry. We start with an overview to coal, electricity generation and industrial processes used in the industry. We then discuss the primary air pollutants from coal-based power generation.

Next is a section devoted to air pollution control technologies for coal-fired power plants. We describe and discuss the major pollutants and the means for their control. We end with a review of recent patent activity.

Next is our market analysis chapter, with estimates and forecasts for methods to control the four primary types of air pollution from coal-based power plants: sulfur dioxide, nitrogen oxides, particulate matter and hazardous air toxics (for these the focus in recent years is on mercury control). Our base estimate year is 2012 and we forecast to 2017. As noted, our market analyses and forecasts are in the form of a simple scenario analysis, with optimistic, pessimistic and most realistic scenarios.

The next chapter is devoted to industry structures and competitive analysis, with focus on the electric power generation and air pollution control industries.

We follow next with a chapter devoted to government, regulatory and public issues. The environment is a very politically sensitive issue, and governments, ranging from the federal Congress and agencies down to local pollution control districts are all working on this issue. We review current and pending legislation, the status of deregulation, note some current regulatory issues, and end with some current public perceptions and issues.

Our final narrative chapter is devoted to company profiles of several of the most significant companies in the air pollution control industry.

We end with an appendix, a glossary of important terms and acronyms that are important to this industry.

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To order this report:Coal_energy Industry: Air Pollution Control for Coal-Fired Power Plants

Nicolas Bombourg

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Hinchey Thanks Constituents at Last Official Stops in Orange and Ulster Electric Light and Power

12/19/2012

Office of the House of Representative Maurice Hinchey, U.S Government has issued the following news release:

Retiring Congressman Maurice Hinchey (D-NY) today continued his final tour throughout New York's 22nd Congressional District. In visits with constituents and local officials in Kingston and Newburgh, Hinchey discussed his many accomplishments, but the primary reason for his visit was to say thank you to the area residents he has represented over the past 20 years. Hinchey will officially leave office on January 3, 2013 at noon.

"Despite all the battles won and lost, I wanted to be here today to say thank you to all of you who stood with me as we took on the big fights," said Hinchey. "For these reasons and many others, I am very proud to have represented you in Congress, proud to call you my friends, and proud of what we have accomplished together. You stood with me every step of the way. For that I thank you from the bottom of my heart. I look back on my life in public service proud of what we accomplished together, regretful that I could not do more and hopeful that you will pick up where I left off, and continue the fight for this region and for what is right."

In Kingston, Hinchey reflected on his career in the New York State Assembly, where he led an investigation into organized crime's control of the waste hauling industry, championed efforts to clean up love canal and passed legislation to control acid rain. Hinchey also talked about his long-term effort to rid the Hudson River of PCB contamination -- a fight which he continued in Congress. Hinchey is also proud of creating the Hudson River Valley Greenway, and later the Hudson River Valley National Heritage area -- designations which have increased tourism and access to state and federal resources.

The retiring Congressman also noted his work to restore several local historic landmarks including Kingston City Hall, the Old Dutch Church, Sam's Point, and the Kingston Rondout Waterfront Promenade. Hinchey, who also delivered millions in federal investments to strengthen local infrastructure, pointed to wastewater projects along the Kings Highway corridor and streetscape improvements in Saugerties. The Walkway Over the Hudson, which is seen as one of the Congressman's greatest successes, was jump started by a $1.3 million in federal investment Hinchey secured. Hinchey also pointed to his work to establish The Solar Energy Consortium (TSEC), which has created 600 energy-related jobs with many more on the way.

In Newburgh, the Congressman talked about legislation he introduced early in his career with Senator Daniel Patrick Moynihan to convert 400 miles of Route 17 into federal Interstate 86. The associated projects have created hundreds of jobs. Other Orange County investments discussed by Hinchey include the New York Renewable Energy Cluster, which established a strategic partnership between TSEC, SUNY Orange and Gateway to Entrepreneurial Tomorrows to create new jobs, develop small businesses and spur economic revitalization. Hinchey also discussed his work to prevent the outsourcing and privatization of jobs at West Point, and federal funding he secured to initiate upgrades at Stewart Air National Guard Base.

On the big national issues, Hinchey said he always tried to stand up for what he believed was right, even though it was not always popular. Hinchey pointed to his opposition to the invasion and occupation of Iraq, votes against the deregulation of Wall Street that led to the 2008 financial collapse, and votes against unfair trade deals like NAFTA that caused the exportation of millions of manufacturing jobs. "Instead of listening to the lobbyists, I listened to the people," he said. "Instead of standing with my political party, I stood with the New Yorkers I was sent to represent."

A comprehensive list of Hinchey's achievements as member of the New York State Assembly and U.S. House follows:

EPA & Hydraulic Fracturing - Dec. 15 to 20

• Under Hinchey's leadership as Chairman of the Environmental Conservation Committee, the panel conducted a successful investigation into the causes of "Love Canal," the nation's first major toxic dumpsite, and developed landmark environmental legislation including the nation's first law to control acid rain.

• Between 1982 and 1992, Hinchey led an investigation into organized crime's control of the waste-hauling industry that led to the conviction of more than 20 criminal figures, including one for murder.

• Hinchey successfully led the fight, first in Albany and later in Washington, to force General Electric to pay for and clean up the 1.3 million pounds of PCBs it dumped into the Hudson River between 1947 and 1977. Dating back to his days as Chair of the State Assembly's Environmental Conservation Committee, Hinchey fought against numerous attempts to delay and narrow the clean-up process, and he worked tirelessly to make sure the U.S. Environmental Protection Agency held GE responsible for the cleanup. In 2011, Hinchey visited the upper Hudson River to laud the commencement of the second and final phase of the cleanup as a critical step forward in removing PCB contamination that has plagued the Hudson River for many decades.

• As an assemblyman, Hinchey developed the statewide system of Urban Cultural Parks, including those in Kingston and Binghamton and authored the legislation that created the Hudson River Valley Greenway. He built on this accomplishment later, as a member of Congress, by writing and championing the passage of legislation that created the Hudson River Valley National Heritage Area, giving the region national prominence as well as access to increased federal resources.

• In his first year in Congress, Hinchey helped to initiate and spearhead the successful legislative effort to preserve more than 15,000 acres in Sterling Forest, the last significant area of open space in the New York metropolitan region and an important watershed for southeastern New York and northern New Jersey.

• As a member of the House Banking Committee, Hinchey's pointed and persistent questioning of Alan Greenspan forced the Federal Reserve Board Chairman to admit to the existence of taped recordings of the meetings of the Federal Open Markets Committee (FOMC), the board's policy making body. As a result, the public now has direct insight into the thinking of the FOMC, and the logic behind the decisions affecting interest rates and other important economic policies.

• In 1993, Hinchey and the late Senator Daniel Patrick Moynihan authored legislation designating New York's Route 17 as Interstate 86, in order to bring increased economic activity to the Southern Tier and Catskills regions. After their legislation was passed as part of the 1998 Building Efficient Surface Transportation Equity Act for the 21st Century (BESTEA-21), the 381 mile stretch of Route 17 was set on a path to becoming I-86, making it eligible for a wide array of new federal funding. The conversion of Route 17 to I-86 will eventually provide a federal interstate connection from I-90 at Erie, PA to I-87 at Harriman, NY. The New York State Department of Transportation is currently planning a major reconstruction project for Prospect Mountain in Binghamton, New York, which will create more than 200 jobs.

• In 1999, Hinchey succeeded in passing an amendment that required the CIA to report to Congress on its involvement in the 1973 coup of Chile's democratically elected President, Salvador Allende. Following the coup, President Allende was assassinated and General Augusto Pinochet began his 17-year dictatorship. The report, now known as the Hinchey Report, makes a clear case that the United States - at the very highest levels of government - was deeply involved in the destabilization of Chile's government and economy over a period of nearly 20 years.

• In 1999 and 2000, Hinchey successfully secured emergency assistance for U.S. apple farmers who suffered severe weather-related crop damage. Without this emergency aid, many apple farms in New York would have been lost.

• As a member of the House Appropriations Committee, Hinchey has secured billions of dollars in federal aid to spur job growth, improve public infrastructure, advance education and the arts, improve health care facilities and services, and

support economic development in local communities throughout the congressional district he represents in a wide array of ways.

• Hinchey provided early and key support for the revitalization of the old Poughkeepsie Railroad Bridge by drawing attention to its potential and securing the first public funds for what would eventually become the Walkway Over the Hudson. Overall, the congressman directly secured $1.34 million in federal funding for the project and helped deliver an additional $2.4 million through the 2008 American Recovery and Reinvestment Act. The federal money combined with state and private contributions, namely through Robert Dyson's Dyson Foundation, were used to create what has become the world's longest pedestrian/bicycle bridge. The Walkway has attracted more than 1.2 million visitors since opening to the public in 2009.

• Hinchey was one of the first and most outspoken members of Congress to oppose President Bush's effort to invade Iraq. He subsequently became a forceful critic of ongoing operations within Iraq and led the call for the removal of U.S. forces, which has now occurred.

• Hinchey led the congressional outcry against the NSA's warrantless surveillance program that was instituted under President Bush. He requested, and helped successfully secure, the launch of an independent Department of Justice probe to determine any wrongdoing.

• In 2007, Hinchey led the effort to establish The Solar Energy Consortium (TSEC) -- a not-for-profit entity in upstate New York that brings together private solar companies and research institutions throughout the state to develop new ways to efficiently and effectively develop economically viable solar technologies. The results have been extraordinary. Hinchey and TSEC have attracted numerous companies to upstate New York and helped create more than 600 solar energy-related jobs with many more on the way.

• Hinchey is the primary leader in Congress to protect drinking water and the environment from the risks of hydraulic fracturing. He is a co-author of the FRAC Act, which would mandate public disclosure of chemicals used in fracking fluid and allow the EPA to regulate fracking activities under the Safe Drinking Water Act.

• In 2009, Hinchey authored the appropriations language that initiated the EPA's current national study on hydraulic fracturing. This is the first comprehensive and independent analysis of the risks that hydraulic fracturing poses to drinking water.

For further information please visit: http://hinchey.house.gov

EPA & Hydraulic Fracturing - Dec. 15 to 20

Fracking Health Impact Study Details Requested By New York Environmental Groups
Huffington Post, The

12/19/2012

ALBANY, N.Y. (AP) — A coalition of environmental groups called on New York state officials Tuesday to release details of a health impact study for shale gas drilling and high-volume hydraulic fracturing.

Representatives of a dozen prominent organizations signed a letter to Health Commissioner Nirav Shah and Environmental Conservation Commissioner Joseph Martens. They asked them to make public the health impact study being evaluated by a scientific panel, and called for public hearings and a 60-day public comment period on the health study.

A DEC spokeswoman referred questions to the health department, which didn't immediately respond to a request for comment.

DEC did the health study as part of an environmental impact review of shale gas development which started in July 2008 and is expected to be completed within a few months.

Martens announced in September that he was rejecting demands from health and environmental groups to commission a comprehensive health impact study by university experts on shale gas development. Such a study would likely scrutinize the potential for myriad health impacts, from diesel exhaust air pollution to sexually transmitted diseases spread by out-of -state well site workers.

Instead, Martens said he had asked Shah to review the health impacts identified by DEC in its environmental study and commission a panel of nationally recognized experts to weigh in as well.

No details of DEC's health impact assessment have been made public. It was not included in the 1,500-page draft environmental impact study released in September 2011. That document and an earlier version released in 2009 generated more than 80,000 public comments.

"To be valid and meaningful, it is absolutely critical that the health review process provide a genuine opportunity for input by local, county and New York State medical and public health professionals," the letter from the environmental coalition says.

With the health impact review still pending, DEC released revised drilling regulations for public comment on Dec. 12 and is taking comments until Jan. 11. The environmental groups also criticized that decision, saying the health review should come first.

Groups signing the letter include Catskill Mountainkeeper, Common Cause, Environmental Advocates, the Natural Resources Defense Council, Sierra Club, Earthjustice and Adirondack Mountain Club, among others.

State Lawmakers And Environmental Activists Express Opposition To Hydro Fracking

NEW YORK, NY - JANUARY 11: Opponents of hydraulic fracturing in New York state attend a news conference and rally against hydraulic fracturing, also known as fracking, on January 11, 2012 in New York City. The event, which was held on the steps of City Hall, called for an end to the controversial gas drilling method as environmental groups increasingly warn about contamination of the state's aquifers that could poison its drinking water. (Photo by Spencer Platt/Getty Images)

EPA & Hydraulic Fracturing - Dec. 15 to 20

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NEW YORK, NY - JANUARY 11: Eric Weltman of Food & Water Watch attends a news conference and rally against hydraulic fracturing, also known as fracking, in New York State on January 11, 2012 in New York City. The event, which was held on the steps of City Hall, called for an end to the controversial gas drilling method as environmental groups increasingly warn about contamination of the state's aquifers that could poison its drinking water. (Photo by Spencer Platt/Getty Images)

Department Of Environmental Conservation Holds Hydro Fracking Hearing

NEW YORK, NY - NOVEMBER 30: Opponents and supporters of gas-drilling, or fracking, walk into the last of four public hearings on proposed fracking regulations in upstate New York on November 30, 2011 in New York City. Fracking, a process that injects millions of gallons of chemical mixed water into a well in order to release gas, has become a contentious issue in New York as critics of the process belive it contaminates drinking water among other hazards. NewYork City gets much of its drinking water from upstate reservoirs. If the regulations are approved, drilling in the upstate New York Marcellus Shale could begin next year. (Photo by Spencer Platt/Getty Images)

Cuadrilla Shale Fracking Plant

PRESTON, LANCASHIRE - OCTOBER 07: Engineers on the drilling platform of the Cuadrilla shale fracking facility on October 7, 2012 in Preston, Lancashire. The controversial method of extracting gas by pumping high pressure water and chemicals into shale formations deep underground has been blamed for two minor earthquakes in the surrounding region. Environmental campaigners are calling for a halt to the drilling of what Cuadrilla believe could be significant reserves of natural gas. (Photo by Matthew Lloyd/Getty Images)

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PRESTON, LANCASHIRE - OCTOBER 07: Engineers at work on the drilling platform of the Cuadrilla shale fracking facility on October 7, 2012 in Preston, Lancashire. The controversial method of extracting gas by pumping high pressure water and chemicals into shale formations deep underground has been blamed for two minor earthquakes in the surrounding region. Environmental campaigners are calling for a halt to the drilling of what Cuadrilla believe could be significant reserves of natural gas. (Photo by Matthew Lloyd/Getty Images)

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EPA & Hydraulic Fracturing - Dec. 15 to 20

PRESTON, LANCASHIRE - OCTOBER 07: A lump of shale rock on display at the Cuadrilla shale fracking facility on October 7, 2012 in Preston, Lancashire. The controversial method of extracting gas by pumping high pressure water and chemicals into shale formations deep underground has been blamed for two minor earthquakes in the surrounding region. Environmental campaigners are calling for a halt to the drilling of what Cuadrilla believe could be significant reserves of natural gas. (Photo by Matthew Lloyd/Getty Images)

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PRESTON, LANCASHIRE - OCTOBER 07: Drill heads on display at the entrance to the Cuadrilla shale fracking facility on October 7, 2012 in Preston, Lancashire. The controversial method of extracting gas by pumping high pressure water and chemicals into shale formations deep underground has been blamed for two minor earthquakes in the surrounding region. Environmental campaigners are calling for a halt to the drilling of what Cuadrilla believe could be significant reserves of natural gas. (Photo by Matthew Lloyd/Getty Images)

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Hydraulic Fracturing Prevention Press Conference

NEW YORK, NY - APRIL 25: Actor/director Mark Ruffalo (C) speaks at the Hydraulic Fracturing prevention press conference urging the protection of the drinking water source of 15 million Americans at Foley Square on April 25, 2011 in New York City. (Photo by D Dipasupil/Getty Images)

Hydraulic Fracturing Prevention Press Conference

NEW YORK, NY - APRIL 25: (L-R) Actor/director Mark Ruffalo, Denise Katzman, Wenonah Hauter, and Water Defense co-founder/campaign director Claire Sandberg attend the Hydraulic Fracturing prevention press conference urging the protection of the drinking water source of 15 million Americans at Foley Square on April 25, 2011 in New York City.

EPA & Hydraulic Fracturing - Dec. 15 to 20

(Photo by D Dipasupil/Getty Images)

Josh Fox on Obama, the EPA, and House Republicans Who Had Him Arrested

HuffPost Green Editor Joanna Zelman talks to Josh Fox, director of the documentary 'Gasland,' about hydro-fracking, the EPA, and the House Republicans who had him arrested during a Congressional hearing.

Game Changer in Green: Mark Ruffalo

The expertise and the grassroots zeal Mark Ruffalo has brought to the issue of fracking is changing the game in green.

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EPA & Hydraulic Fracturing - Dec. 15 to 20

More On Anticipated EPA Fracking Study Before Its News

12/18/2012

Mandated by Congress in EPA's fiscal year 2010 budget, the agency's highly anticipated study on the drinking water risks posed by fracking – the injection of chemical-laced fluids to extract oil and gas — is expected to set a benchmark for whether EPA needs to regulate the injection practice and whether Congress needs to amend current law to provide that authority.

If EPA decides, based on the final study results, to make the case for expanding federal oversight of hydraulic fracturing, the Safe Drinking Water Act (SDWA) would be the most logical place to do that — though the industry is opposed to such an approach and Congress would first need to reverse a statutory exemption before the agency could regulate the practice.

The study has already proven contentious. Industry groups and members of Congress have urged the agency to narrow the study's scope and to step up scientific scrutiny before the study goes final. While industry has long opposed efforts to regulate the injection practice under SDWA, saying the practice is safe, wastewater contamination issues are also a concern. For example, one particularly contentious question is over disposal of fracking wastewater and how broadly EPA is considering the issue.

EPA's science advisors had urged the agency to considerwastewater disposal practices, though EPA decided that it would only consider whether there is inadequate treatment at municipal and industrial treatment facilities for wastewater from fracking.

At technical meetings held last month, environmentalists called for the agency to broaden its pending assessment to review controversial wastewater disposal to underground reservoirs — where the majority of wastewater from the industry is disposed, rather than just the limited releases to treatment facilities that EPA is currently reviewing. But EPA told the advocates that the agency will not do such research as part of the pending study — but rather as part of broader research it is conducting with other federal agencies. (Inside EPA)

EPA & Hydraulic Fracturing - Dec. 15 to 20

EPA URGED TO EXPAND FRACKING STUDY'S FOCUS ON WASTEWATER DISPOSAL RISKS
Inside EPA Weekly Report

12/18/2012

Environmentalists are urging EPA to broaden its pending assessment of the risks posed by wastewater disposal from hydraulic fracturing, saying the agency's pending study on the risks posed by fracking to drinking water resources should include controversial disposal to underground reservoirs, where the majority of wastewater from the industry is disposed, rather than just the limited releases to treatment facilities that EPA is currently reviewing.

An EPA spokeswoman says that while the agency recognizes that wastewater disposal to underground injection wells is an important issue, it is not within the current scope of the study.

That research could eventually bolster environmentalists' calls to strengthen EPA rules governing underground injection of wastewater from oil and gas drilling operations, which is currently exempt from strict hazardous-waste-disposal requirements.

During a recent series of discussions EPA is holding ahead of the interim report's release the week of Dec. 17, environmentalists revived the question of what type of wastewater disposal issues the agency should be studying, according to an environmentalist familiar with the meetings. "People said [EPA] should be looking more broadly at how much waste" is being generated, as well as "where trends are going" for management and disposal of those wastes, the source adds.

The source says EPA officials acknowledged that the majority of wastewater -- at least 90 percent -- gets injected to underground disposal wells, but also that it was outside the scope of the current study, and that while it warranted further discussion, budget constraints would likely hinder the agency's ability to examine those impacts in the two-year study.

"With the current study, they're not really looking at that," but "there's interest in where the wastewater is actually going," the source says.

EPA and others suggested that the agency could seek to study potential impacts associated with disposal wells in the context of planned research it intends to do in collaboration with the departments of Interior and Energy under a pact outlining how the agencies would align research on environmental and safety issues related to fracking.

Many observers have long been concerned that produced water discharges from fracking operations contain a host of pollutants that are contaminating surface water resources.

But EPA's pending study on the risks posed by fracking to drinking water resources -- an interim version of which is slated for release the week of Dec. 17 -- is examining only whether there is inadequate treatment at municipal and industrial treatment facilities for wastewater from fracking.

EPA's study generally seeks to analyze five phases of the water cycle associated with fracking: water acquisition; chemical mixing; well injection; flowback and produced water; and wastewater treatment. The study is comprised of retrospective and prospective case studies at fracking sites, in addition to literature review, laboratory analysis and other types of research.

The agency Nov. 14-16 held roundtables on each of the five water cycle phases of its two-year fracking study, slated for completion in 2014, for the purpose of flagging issues for more in-depth discussions at an upcoming series of technical workshops.

EPA & Hydraulic Fracturing - Dec. 15 to 20

The wastewater phase of the study, discussed during a Nov. 16 meeting, seeks to examine "[w]hat are the possible impacts of inadequate treatment of hydraulic fracturing wastewater on drinking water resources?"

Industry groups have questioned the need for the study to examine potential impacts associated with wastewater treatment processes. For example, America's Natural Gas Alliance (ANGA) said in comments submitted last May to EPA's Science Advisory Board panel that was charged with reviewing the study plan that the portion of hydraulic fracturing wastewaters that are processed through treatment facilities will continue to diminish. "Consequently, it would make little sense to focus limited time and resources on those questions," ANGA said.

But according to documents that the agency released Dec. 11 and that were presented during the Nov. 16 meeting, the study is focusing on the efficacy of treatment processes because "discharge of treated wastewater to surface waters provides an opportunity for chemicals found in the effluent to be transported to downstream drinking water intakes." The study will also examine some treatment processes associated with reusing fracking wastewater, the documents say. The documents are available on InsideEPA.com. (Doc. ID: 2418844)

Environmentalists, however, say the study's narrow focus on treatment plants may address concerns in Pennsylvania and other eastern states where geologic conditions prohibit operators from injecting their wastewater underground, but it would not assess the risks of the more widely used disposal practice of injecting wastewater from fracking into underground injection control (UIC) wells.

In the western United States, for example, produced water, the natural brine dredged up during fracking, and flowback, which refers to sometimes-contaminated remnants of the water injected during fracking, are generally disposed of in UIC wells.

Although wastewater disposal to wells regulated by EPA's UIC program is not used in all oil- and gas-producing states because of geological differences, it is generally regarded by the agency and industry as the preferred option for accommodating the massive volumes of waste produced by fracking operations.

But environmentalists say the disposal is not adequately regulated because the agency has long exempted oil and gas wastewater from hazardous waste regulation. The result of the exclusion is that it has allowed the wells to be handled as lesser-regulated Class II wastewater disposal wells, rather than more strictly regulated Class I wells.

Of particular concern for environmentalists is that the agency's UIC rules do not require permit writers to consider potential seismic risks when permitting Class II wells -- though a series of earthquakes tied to fracking wastewater disposal in Ohio has brought renewed attention to the issue.

To address this, environmentalists are petitioning EPA to eliminate the exclusion, which will force the wastewater to be disposed of in more strictly regulated Class I wells that require consideration of potential seismic risks, rather than as Class II wastewater disposal wells, whose rules do not currently require consideration of possible seismic effects.

Meanwhile, oil and gas company Encana is reinvigorating its push for EPA to withdraw its landmark December 2011 draft report finding that the producer's Wyoming fracking operations likely contributed to groundwater contamination.

During a Dec. 6 call with reporters, Encana's David Stewart reiterated the company's previous criticisms of EPA's groundwater study, including that the agency's geological assessment of the Pavillion, WY, shale formation is flawed, that EPA used constituents in its monitoring process that could have contaminated the laboratory findings and that the agency failed to fully investigate palatability concerns of citizens living near the drilling site. Stewart referred to the study as "sloppy work in the field and in the lab," and said EPA and other agencies should halt any plans to conduct further tests from the agency-prepared monitoring wells.

EPA & Hydraulic Fracturing - Dec. 15 to 20

An Encana spokesman previously told Inside EPA that the Wyoming study raises industry concerns about EPA's methodology for conducting the larger two-year study, saying, "If this is the template for how they want to go about it, that's frightening."

The draft report represents the first time EPA has publicly indicated that the fracking injection process could have contaminated a drinking water aquifer, as opposed to poor cementing or other aspects of natural gas drilling. -- Bridget DiCosmo

EPA & Hydraulic Fracturing - Dec. 15 to 20

EPA Urged To Expand Fracking Study's Focus On Wastewater Disposal Risks Inside EPA Weekly Report

12/18/2012

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Hinchey Thanks Constituents at Last Official Stops in Orange and Ulster
Utility Products Magazine - Online

12/18/2012

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"Despite all the battles won and lost, I wanted to be here today to say thank you to all of you who stood with me as we took on the big fights," said Hinchey. "For these reasons and many others, I am very proud to have represented you in Congress, proud to call you my friends, and proud of what we have accomplished together. You stood with me every step of the way. For that I thank you from the bottom of my heart. I look back on my life in public service proud of what we accomplished together, regretful that I could not do more and hopeful that you will pick up where I left off, and continue the fight for this region and for what is right."

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* In his first year in Congress, Hinchey helped to initiate and spearhead the successful legislative effort to preserve more than 15,000 acres in Sterling Forest, the last significant area of open space in the New York metropolitan region and an important watershed for southeastern New York and northern New Jersey.

* As a member of the House Banking Committee, Hinchey's pointed and persistent questioning of Alan Greenspan forced the Federal Reserve Board Chairman to admit to the existence of taped recordings of the meetings of the Federal Open Markets Committee (FOMC), the board's policy making body. As a result, the public now has direct insight into the thinking of the FOMC, and the logic behind the decisions affecting interest rates and other important economic policies.

* In 1993, Hinchey and the late Senator Daniel Patrick Moynihan authored legislation designating New York's Route 17 as Interstate 86, in order to bring increased economic activity to the Southern Tier and Catskills regions. After their legislation was passed as part of the 1998 Building Efficient Surface Transportation Equity Act for the 21st Century (BESTEA-21), the 381 mile stretch of Route 17 was set on a path to becoming I-86, making it eligible for a wide array of new federal funding. The conversion of Route 17 to I-86 will eventually provide a federal interstate connection from I-90 at Erie, PA to I-87 at Harriman, NY. The New York State Department of Transportation is currently planning a major reconstruction project for Prospect Mountain in Binghamton, New York, which will create more than 200 jobs.

* In 1999, Hinchey succeeded in passing an amendment that required the CIA to report to Congress on its involvement in the 1973 coup of Chile's democratically elected President, Salvador Allende. Following the coup, President Allende was assassinated and General Augusto Pinochet began his 17-year dictatorship. The report, now known as the Hinchey Report, makes a clear case that the United States - at the very highest levels of government - was deeply involved in the destabilization of Chile's government and economy over a period of nearly 20 years.

* In 1999 and 2000, Hinchey successfully secured emergency assistance for U.S. apple farmers who suffered severe weather-related crop damage. Without this emergency aid, many apple farms in New York would have been lost.

* As a member of the House Appropriations Committee, Hinchey has secured billions of dollars in federal aid to spur job growth, improve public infrastructure, advance education and the arts, improve health care facilities and services, and

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support economic development in local communities throughout the congressional district he represents in a wide array of ways.

* Hinchey provided early and key support for the revitalization of the old Poughkeepsie Railroad Bridge by drawing attention to its potential and securing the first public funds for what would eventually become the Walkway Over the Hudson. Overall, the congressman directly secured $1.34 million in federal funding for the project and helped deliver an additional $2.4 million through the 2008 American Recovery and Reinvestment Act. The federal money combined with state and private contributions, namely through Robert Dyson's Dyson Foundation, were used to create what has become the world's longest pedestrian/bicycle bridge. The Walkway has attracted more than 1.2 million visitors since opening to the public in 2009.

* Hinchey was one of the first and most outspoken members of Congress to oppose President Bush's effort to invade Iraq. He subsequently became a forceful critic of ongoing operations within Iraq and led the call for the removal of U.S. forces, which has now occurred.

* Hinchey led the congressional outcry against the NSA's warrantless surveillance program that was instituted under President Bush. He requested, and helped successfully secure, the launch of an independent Department of Justice probe to determine any wrongdoing.

* In 2007, Hinchey led the effort to establish The Solar Energy Consortium (TSEC) -- a not-for-profit entity in upstate New York that brings together private solar companies and research institutions throughout the state to develop new ways to efficiently and effectively develop economically viable solar technologies. The results have been extraordinary. Hinchey and TSEC have attracted numerous companies to upstate New York and helped create more than 600 solar energy-related jobs with many more on the way.

* Hinchey is the primary leader in Congress to protect drinking water and the environment from the risks of hydraulic fracturing. He is a co-author of the FRAC Act, which would mandate public disclosure of chemicals used in fracking fluid and allow the EPA to regulate fracking activities under the Safe Drinking Water Act.

* In 2009, Hinchey authored the appropriations language that initiated the EPA's current national study on hydraulic fracturing. This is the first comprehensive and independent analysis of the risks that hydraulic fracturing poses to drinking water.

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PSEHE: Where Ideology Trumps Reality
Forbes - Online

12/18/2012

Recently a group called Physicians, Scientists and Engineers for Healthy Energy (PSEHE) organized a petition urging President Obama to delay, or entirely avoid, the prospect of exporting natural gas to friends and allies around the globe. The way PSEHE tells it, authorizing this activity would increase the use of hydraulic fracturing and thus, the public's exposure to adverse health effects.

Being a thirty three year veteran of the oil and natural gas industry I found it odd that I hadn't heard of this organization so I decided to indulge my curiosity by browsing their website. Upon doing so, two things made themselves readily apparent. PSEHE focuses its efforts exclusively on shale development, and as a recent media account noted, "language on the group's website suggests an anti-development viewpoint." With my curiosity piqued, I continued digging.

It turns out PSEHE is funded by the Park Foundation. The Foundation's penchant for attacking the natural gas industry was noted by E&E News earlier this year. In short, Park is behind nearly every anti-natural gas initiative to date. Nestled in the sleepy town of Ithaca, New York, the foundation has supported projects ranging from Josh Fox's Gasland to groups like Earth Justice and Earthworks, as well as efforts to "stop unsafe gas drilling" in the Empire State. I kept digging.

PSEHE was founded by Dr. Anthony Ingraffea, a professor at Cornell University, who is a co-author of a widely discredited study on lifecycle methane emissions from oil and gas development emanating from shale development. The professor's research has been criticized by agencies of the federal government (DOE/NETL) and multiple peer-reviewed papers, including a recent Massachusetts Institute of Technology (MIT) study coauthored by a lead author of the IPCC Fifth Assessment Report, who noted the study used "unreasonable" assumptions to arrive at its conclusions. Dr. Ingraffea has also shown an increasing willingness to make statements refuted by experience and independent review. At a June 2012 congressional briefing, Ingraffea claimed that "hundreds if not thousands of cases of water contamination [occur], anywhere shale gas development occurs."

Further, Ingraffea revealed his real intentions earlier this year during a presentation in Pennsylvania where the professor declared, "How do you decrease methane emissions? You got it, stop unconventional productions of natural gas from shales because unconventional natural gas from shales is the single most prevalent present source of methane emissions."

But regardless of the clear and apparent bias of the funders and founders of PSEHE, their trepidation regarding LNG exports centers around "health concerns" associated with hydraulic fracturing that have been rebuked by state and federal regulators on countless occasions.

While PSEHE raises "exposure to polluted air, water, and soil" as a reason for delay; a review shows their concern is misplaced. In two of the most heavily drilled states in the U.S., there is no sign natural gas development has caused harmful air pollution. In Pennsylvania for example, the Department of Environmental Protection (DEP) has found that there are no emissions from Marcellus shale activities that reach levels harmful to human health. And in Texas, the Texas Commission on Environmental Quality (TCEQ) has found no connections between oil and gas operations and immediate health concerns. In fact, ozone levels have declined even as production has dramatically increased in the Barnett shale. In the Dallas-Fort Worth area, as total gas production in 2009 increased by 94 percent from 2000 levels, the levels of ground level ozone fell by nearly 15 percent.

At the same time, Federal and state regulators have noted time and again that there hasn't been a single case of hydraulic fracturing contaminating groundwater in over 65 years of its use. This was noted in May 2011 when EPA

administrator Lisa Jackson told the U.S. Senate that she wasn't aware "of any proven case where the fracking process itself affected water."

This safety of natural gas development in general, and hydraulic fracturing in particular has been noted by three presidential administrations — Clinton, Bush and Obama — all of whom have testified to the safety of natural gas development and hydraulic fracturing. This is further supported by statements made by regulators in more than 16 U.S. states and by countless government and academic studies. Even respected environmental groups like the Environmental Defense Fund have affirmed that state regulatory agencies are well-equipped to manage natural gas development (although the Park Foundation has funded groups who tried to suggest otherwise).

These are all unrefuted facts, and, as President Ronald Reagan famously said, facts are stubborn things. But ideology is also a stubborn thing, and when a group is as blatantly driven by ideology as are PSEHE and the Park Foundation, factors like facts and reality are just inconvenient obstacles to be ignored. Sad, but true.

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Colorado Oil And Gas Industry Under Pressure As Protests Mount
Huffington Post, The

12/17/2012

In this Dec. 5, 2012 photo, the sun sets behind an oil pump jack and the Rocky Mountains near Fredrick, Colo. (AP Photo/Ed Andrieski)

COLORADO SPRINGS, Colo. (AP) — This used to be a land proud of its oil barons. Now the energy industry that has brought wealth and jobs across the interior West is prompting angry protests by citizens sporting gas masks and using bullhorns at public hearings.

A generation after the fictional oil tycoons of the TV soap "Dynasty" gave Denver's oil and gas industry a glamorous sheen, the Rocky Mountain region appears to be questioning its romance with the industry. New drilling technology has moved oil and gas production from the sparsely populated plains, where oil rigs are embraced as job creators, closer to cities and suburbs. Now, conflicts are increasing along the populous eastern fringe of the Rockies.

Gas-mask-wearing protesters are confronting city and county officials considering whether to limit or ban hydraulic fracturing, a drilling procedure in which water, sand and chemicals are forced deep underground to pry oil and gas from rock. Fracking, as the procedure is called, has led to an energy boom in areas previously unattractive to energy producers, but it is also raising concerns about air and water quality.

The protests in Colorado have gotten intense. At hearings across the state, shouting opponents harass oil and gas representatives. Even Colorado's governor, a Democrat and former geologist who says fracking is safe, has been mobbed by protesters. Leaving a suburban Denver meeting about drilling earlier this fall, Gov. John Hickenlooper ducked into an SUV and pulled away as a crowd of protesters, some of them children, chanted, "Dirty water, dirty air, we get sick and you don't care!"

Opposition to fracking has also surfaced in Idaho, New Mexico, Utah and Wyoming. The U.S. Environmental Protection Agency has probed whether the procedure may be responsible for groundwater contamination near the Wyoming town of Pavillion. State officials and others have disputed that claim.

The West's anti-fracking movement hit a watershed moment in a Denver suburb in this year's elections. Longmont, a town of about 85,000 located 30 miles from Denver, voted overwhelmingly to buck state law and prohibit fracking in the city, setting up a legal showdown over whether individual communities can challenge the powerful Colorado Oil & Gas Conservation Commission, which regulates the industry statewide.

The vote inspired other fracking opponents from Fort Collins to Colorado Springs — and underscores the energy industry's challenge as it looks to expand into new production areas.

"It's the classic case ... of where you stand depends on where you sit," said David Kennedy, head of the Bill Lane Center for the American West at Stanford University. "The historic battle in the West has been the cities and the farmers. Now it's the cities, farmers and the frackers, all battling for water."

The battle is one fracking opponents say they can win, despite a legacy of pro-drilling policies across the state and region.

"We're an oil and gas state. We know that. We're going up against a huge industry," said Neshama Abraham, a freelance writer in Boulder who has helped lead fracking opposition in her county. "This is tremendously dangerous technology that

is at our front door."

The "fracktivists" are making noise even in heavily Republican areas. At a recent city council meeting in Colorado Springs, fracking protesters waved signs warning of environmental destruction while passing drivers honked their support. "You can't drink oil," read one poster.

"I think Longmont gave people hope that it is possible to take on this industry," said Laurel Biedermann, a fracking skeptic in Colorado Springs. "We don't have to bend over and be a doormat for this industry."

The Colorado Springs council has postponed a final vote on drilling regulations. In Fort Collins, city officials put a six-month moratorium on fracking after a public hearing in which residents sought the delay.

Fracking proponent Justin Williams, owner of Colorado-based Lone Star Energy, argued at the Colorado Springs council meeting that cities are foolish to try to stop the procedure. Fracking is necessary, he said, because of the nation's energy appetite.

"This demand is unquenchable. If we don't produce it here, it'll be done in countries employing 15-year-olds to do it," Williams said.

Another drilling supporter decried what he calls a "mob mentality" by anti-fracking activists. Former Colorado Springs councilman Sean Paige, now with Colorado's chapter of the right-leaning Americans For Prosperity, said he's disheartened by the new intense tone from opponents. Paige wrote a letter to Colorado governor's calling for more civility after recent boisterous protests.

"There's more conflict," he said, "than ever before."

The dispute will soon shift to the Colorado Capitol, where lawmakers have tried and failed to ease drilling disputes.

During the last legislative session that ended in May, the fracking debate broke down completely. Some Democrats proposed bills to add new environmental requirements for the industry, or to give towns more say over drilling regulations. Republicans countered with proposals that would have stripped any town that banned the drilling procedure of certain tax benefits.

Ultimately Colorado's Democratic Senate and Republican House agreed on nothing related to drilling.

The session that begins next month could be different. With both chambers under Democratic control, fracking limits are likely to be debated again.

"People don't want an industrial process going right across their fence," said Rep. Max Tyler, a Democrat from Denver's western suburbs who will lead a House committee likely to consider drilling regulations next year. "We'll definitely be talking about this."

Find Kristen Wyatt at http://www.twitter.com/APkristenwyatt

State Lawmakers And Environmental Activists Express Opposition To Hydro Fracking

NEW YORK, NY - JANUARY 11: Opponents of hydraulic fracturing in New York state attend a news conference and rally against hydraulic fracturing, also known as fracking, on January 11, 2012 in New York City. The event, which was held on the steps of City Hall, called for an end to the controversial gas drilling method as environmental groups increasingly warn about contamination of the state's aquifers that could poison its drinking water. (Photo by Spencer Platt/Getty Images)

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State Lawmakers And Environmental Activists Express Opposition To Hydro Fracking

NEW YORK, NY - JANUARY 11: Eric Weltman of Food & Water Watch attends a news conference and rally against hydraulic fracturing, also known as fracking, in New York State on January 11, 2012 in New York City. The event, which was held on the steps of City Hall, called for an end to the controversial gas drilling method as environmental groups increasingly warn about contamination of the state's aquifers that could poison its drinking water. (Photo by Spencer Platt/Getty Images)

Department Of Environmental Conservation Holds Hydro Fracking Hearing

NEW YORK, NY - NOVEMBER 30: Opponents and supporters of gas-drilling, or fracking, walk into the last of four public hearings on proposed fracking regulations in upstate New York on November 30, 2011 in New York City. Fracking, a process that injects millions of gallons of chemical mixed water into a well in order to release gas, has become a contentious issue in New York as critics of the process belive it contaminates drinking water among other hazards. NewYork City gets much of its drinking water from upstate reservoirs. If the regulations are approved, drilling in the upstate New York Marcellus Shale could begin next year. (Photo by Spencer Platt/Getty Images)

Cuadrilla Shale Fracking Plant

PRESTON, LANCASHIRE - OCTOBER 07: Engineers on the drilling platform of the Cuadrilla shale fracking facility on October 7, 2012 in Preston, Lancashire. The controversial method of extracting gas by pumping high pressure water and chemicals into shale formations deep underground has been blamed for two minor earthquakes in the surrounding region. Environmental campaigners are calling for a halt to the drilling of what Cuadrilla believe could be significant reserves of natural gas. (Photo by Matthew Lloyd/Getty Images)

Cuadrilla Shale Fracking Plant

PRESTON, LANCASHIRE - OCTOBER 07: Engineers at work on the drilling platform of the Cuadrilla shale fracking facility on October 7, 2012 in Preston, Lancashire. The controversial method of extracting gas by pumping high pressure water and chemicals into shale formations deep underground has been blamed for two minor earthquakes in the surrounding region. Environmental campaigners are calling for a halt to the drilling of what Cuadrilla believe could be significant reserves of natural gas. (Photo by Matthew Lloyd/Getty Images)

Cuadrilla Shale Fracking Plant

PRESTON, LANCASHIRE - OCTOBER 07: General views of the Cuadrilla shale fracking facility on October 7, 2012 in Preston, Lancashire. The controversial method of extracting gas by pumping high pressure water and chemicals into shale formations deep underground has been blamed for two minor earthquakes in the surrounding region. Environmental campaigners are calling for a halt to the drilling of what Cuadrilla believe could be significant reserves of natural gas. (Photo by Matthew Lloyd/Getty Images)

Cuadrilla Shale Fracking Plant

PRESTON, LANCASHIRE - OCTOBER 07: Engineers look at the Cuadrilla shale fracking facility on October 7, 2012 in Preston, Lancashire. The controversial method of extracting gas by pumping high pressure water and chemicals into shale formations deep underground has been blamed for two minor earthquakes in the surrounding region. Environmental campaigners are calling for a halt to the drilling of what Cuadrilla believe could be significant reserves of natural gas. (Photo by Matthew Lloyd/Getty Images)

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Cuadrilla Shale Fracking Plant

PRESTON, LANCASHIRE - OCTOBER 07: A lump of shale rock on display at the Cuadrilla shale fracking facility on October 7, 2012 in Preston, Lancashire. The controversial method of extracting gas by pumping high pressure water and chemicals into shale formations deep underground has been blamed for two minor earthquakes in the surrounding region. Environmental campaigners are calling for a halt to the drilling of what Cuadrilla believe could be significant reserves of natural gas. (Photo by Matthew Lloyd/Getty Images)

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Cuadrilla Shale Fracking Plant

PRESTON, LANCASHIRE - OCTOBER 07: Drill heads on display at the entrance to the Cuadrilla shale fracking facility on October 7, 2012 in Preston, Lancashire. The controversial method of extracting gas by pumping high pressure water and chemicals into shale formations deep underground has been blamed for two minor earthquakes in the surrounding region. Environmental campaigners are calling for a halt to the drilling of what Cuadrilla believe could be significant reserves of natural gas. (Photo by Matthew Lloyd/Getty Images)

Cuadrilla Shale Fracking Plant

PRESTON, LANCASHIRE - OCTOBER 07: An engineer displays a lump of shale rock at the Cuadrilla shale fracking facility on October 7, 2012 in Preston, Lancashire. The controversial method of extracting gas by pumping high pressure water and chemicals into shale formations deep underground has been blamed for two minor earthquakes in the surrounding region. Environmental campaigners are calling for a halt to the drilling of what Cuadrilla believe could be significant reserves of natural gas. (Photo by Matthew Lloyd/Getty Images)

Hydraulic Fracturing Prevention Press Conference

NEW YORK, NY - APRIL 25: Actor/director Mark Ruffalo (C) speaks at the Hydraulic Fracturing prevention press conference urging the protection of the drinking water source of 15 million Americans at Foley Square on April 25, 2011 in New York City. (Photo by D Dipasupil/Getty Images)

Hydraulic Fracturing Prevention Press Conference

NEW YORK, NY - APRIL 25: (L-R) Actor/director Mark Ruffalo, Denise Katzman, Wenonah Hauter, and Water Defense co-founder/campaign director Claire Sandberg attend the Hydraulic Fracturing prevention press conference urging the

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protection of the drinking water source of 15 million Americans at Foley Square on April 25, 2011 in New York City. (Photo by D Dipasupil/Getty Images)

Josh Fox on Obama, the EPA, and House Republicans Who Had Him Arrested

HuffPost Green Editor Joanna Zelman talks to Josh Fox, director of the documentary 'Gasland,' about hydro-fracking, the EPA, and the House Republicans who had him arrested during a Congressional hearing.

Game Changer in Green: Mark Ruffalo

The expertise and the grassroots zeal Mark Ruffalo has brought to the issue of fracking is changing the game in green.

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Resources for Unconventional Gas and Hydraulic Fracturing Environmental Law Professors

12/17/2012

« Rethinking Sustainable Development, ELC Essay #11: Sustainability is the Answer--Now What was the Question? | Main

As 2012 draws to a close, I offer a partial list of some of the best resources for learning, teaching, and writing about drilling and fracturing for natural gas.

1. Opinion section: The biggest threat posed by domestic natural gas may be the displacement of renewables and the associated demise of climate solutions.

Abundant natural gas--the cleaner fossil fuelin terms of greenhouse gases and conventional pollutants--may ultimately lead to the demise of climate goals. In 2012, when the International Energy Agency reported that the United States would become "self sufficient" in energy by 2035 and would possibly become the world's largest producer of oil, its Chief Economist, Faith Birol, also issued dire warnings: Because of the U.S fascination with shale gas and oil, and our new knowledge that we have abundant, accessible unconventional fossil resources, we are ignoring the climate problem and forgetting the urgent need to build renewables. "Climate change has been slipping down the agenda," he said. "It is not having a significant impact on energy investors." Birol concluded: "I don't see much reason to be hopeful that we will see reductions in carbon dioxide. . . . We have seen more carbon dioxide emitted this year." The warning, then, is that the United States will remain blindly optimistic as we wallow in a sea of abundant oil and gas--so blind, in fact, that we will ignore our shrinking coastlines and vanishing species. The solution is not to ignore or stop extracting gas: It has displaced coal at a rapid rate and has reduced energy-related greenhouse gas emissionsin the United States; it's also cheap. But we must continue building renewable generation at a rapid rate; natural gas is supposed to be a bridge to something more sustainable, and if we miss that essential point, we will fail to address what may be the greatest threat to the health of our planet. The abundance and cheap price of gas--particularly in the absence of a carbon tax to accurately price the impacts of fossil fuels--could make it increasingly difficult to maintain a renewable energy focus. This is unfortunate, particularly in light of the fact that natural gas and renewables make a natural pair; gas plants, which can start up rapidly, are a key back-up source for intermittent renewables.

2.Section on natural gas and environmental impact "facts" (Warning: the facts in this area change quickly). 2a. the numbers

International Energy Agency2012: The United States is likely to be self sufficient in energy by 2035 and a major exporter of energy, whereas many other countries will import from us. This does not make us "energy secure," however, as fuels, like other goods, are part of a global market. As the IEA reminds us, "No country is an energy 'island' and the interactions between different fuels, markets and prices are intensifying." (This report is worth getting from your library.)

Energy Information Administration 2012: "As of January 1, 2010, total proved and unproved natural gas resources are estimated at 2,203 trillion cubic feet," but this number changes frequently and is much disputed.

By 2035, the EIA projects that shale gas will account "for 49 percent of total U.S. natural gas production."

There are approximately 16,346 shale gas wells in the Barnett Shale of North Central Texas. There are approximately 1,483 producing gas wells within the City of Fort Worth.

Energy companies have registered approximately 33,277 well sites on FracFocus, the website on which companies

voluntarily report chemicals used in hydraulic fracturing.

In 2010, the states with the largest shale gas production numbers included Texas, Louisiana, Arkansas, Oklahoma, and Pennsylvania.

2b. The global gas situation

On December 13, 2012, the British government decided to allow hydraulic fracturing for natural gas within the United Kingdom.

In September 2012, South Africa lifted a ban on fracturing in one region.

In the following Energy Information Administration map, red areas have been studied most closely.

2c. Useful risk assessments from the United States

One of the most comprehensive assessments of the effects of drilling and fracturing: New York Department of Environmental Conservation Revised Draft Supplemental Generic Environmental Impact Statement on the Oil, Gas, and Solution Mining Program (exploring most of the effects but ignoring the impacts of seismic testing to locate gas underground).

One of the best, brief summaries of drilling and fracturing risks begins on page 3 of the U.S. Fish and Wildlife Service document "Summary of Oil and Gas Development, Hydraulic Fracturing and Issues Associated with Conservation of U.S. Fish and Wildlife Service Trust Resources in the Southwest Region."

The Government Accountability Office, in two reportsthat examine the scientific studies to date, has concluded that we cannot currently quantify fracturing risks from the sparse data currently available.

Rozell and Reaven, Water Pollution Risks Associated with Natural Gas Extraction from the Marcellus Shal (estimating the likely total volume of spills).

Wisconsin Department of Natural Resources, Silica Sand Mining in Wisconsin (describing the environmental impacts of mining sand for fracturing proppant).

Two Duke studies: potential methane contamination of groundwater from drilling and fracturing, and potential contamination of groundwater with brine (naturally produced salty water from formations).

Reply by Richard Davies arguing that methane contamination is unproven.

Duke scientists' to Davies.

EPA Pavillion, Wyoming report on potential contamination of groundwater with fracturing fluids.

For excellent information on chemicals in fracturing, see the EPA's Proceedings of the Technical Workshops for the Hydraulic Fracturing Study: Chemical & Analytical Methods. See also the Congressional report "Chemicals Used in Hydraulic Fracturing."

The EPA has evaluated the potential impact of fracturing wastes on microbial processes in wastewater treatment plants.

The U.S. Fish and Wildlife Service has a brief discussion of the impacts of natural gas drilling and fracturing on fish and

wildlife.

Earthquakes caused by underground injection control wells for the disposal of oil and gas wastes: see Ohio Department of Natural Resources Youngstown report and the Oklahoma Geological Survey report by Austin Holland.

The Texas Water Development Board has a good report on water use in the Barnett Shale.

WorldWatch has a good comparison of lifecycle studies addressing methane emissions from gas development.

2d. Recent regulation and associated legal action

Federal

EPA's final Clean Air Act rules: NSPS for volatile organic compounds from newly fractured and refractured wells; NSPS for sulfur dioxide emissions from gas processing plants and for VOCs from various compressors and storage vessels used in oil and gas production. The American Petroleum Institute claims that the rules will be very expensive and will slow down unconventional development--a familiar industry response, of course, to most environmental regulations.

On December 11, 2012, seven states issued an intent to sue EPA for failure to control methane from oil and gas production.

BLM has proposed fracturing rules for federal and Indian lands, which would require, among other things, testing mechanical integrity of the well before fracturing to ensure that the well can withstand fracturing pressures, continuous monitoring of well pressures during fracturing, reporting of chemicals used, and reporting of total volumes of water used and quantities and methods of waste handling and disposal.

Hydraulic fracturing using diesel fuel--a practice that still occurs--is not exempt from the Safe Drinking Water Act, unlike other types of fracturing. The EPA has issued draft guidancefor this type of fracturing, which would require, among other things, that permit writers consider potential interaction of the fuel with the formation into which it is injected as well as potential reactions that could occur after injection, and a plan for cementing casing (lining) into a well that would "ensure proper cement design and volume." The guidance would also more broadly define diesel to include kerosene, home heating oils, automotive diesel fuel, and others.

In October 2011 the EPA initiated a Clean Water Act rulemaking process "to set discharge standards for wastewater from shale gas extraction."

The EPA is continuing its study of the impacts of hydraulic fracturing (primarily fracturing in shales) on water and is hosting a number of technical roundtables and workshops in 2012 and 2013.

State and regional

The New York Department of Environmental Conservation has issued proposed rules for drilling and fracturing with high volumes of water. The public comment period ends on January 11, 2013.

Texas, which has long resisted revising most of its oil and gas rules despite a major rise in shale gas well numbers, has proposed revisions to its casing regulations and other rules. The Railroad Commission (the state's oil and gas agency) also has, as required by the state legislature, issued rules requiring the disclosureof chemicals used in fracturing.

Oklahoma, Mississippi, and a number of other states also have adopted disclosure rules.

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Montanachanged some of its oil and gas rules to address fracturing, and North Dakota has proposed a similar revision.

Colorado (follow "Rules" hyperlink in blue menu to the left of the page, then follow "2008 Rulemaking" hyperlink, then follow "COGCC Amended Rules Redline"), Ohio (particularly for urbanized areas), Pennsylvania (through several different acts and rulemakings), and West Virginia have made some of the most comprehensive changes to their oil and gas codes.

The Delaware River Basin Commission proposed somewhat extensive rulesfor well site development, drilling, and fracturing within the Delaware River watershed, but the rules have not yet been finalized. New York's attempt to require a NEPA environmental impact statement before the rules were released failed due to a lack of standing, but the judge made it clear that once the rules were finalized, the state could probably return to court. 2012 WL 4336701.

Preemption: Pennsylvania attempted to remove municipalities' authority over many aspects of drilling and fracturing by requiring them to allow the practice in most zones, in exchange for more protective state environmental regulation. The Commonwealth, which had long refused to impose a severance tax on gas, also provided that municipalities could charge an unconventional gas well fee, the proceeds of which would go to a central fund that would be redistributed to fund road infrastructure, environmental clean-up, and other projects. A divided Commonwealth Court of Pennsylvania found that the Act essentially forced municipalities to violate their comprehensive plans and declared portions of the Act null and void. The state's supreme court has heard oral argument. Robinson Twp. v. Commonwealth of Pennsylvania, 52 A.3d 463 (Pa. Cmwlth. 2012).

Colorado's governor instituted a task force on municipal-state relations in regulating natural gas. The task force issued recommendations, but the state has threatened to sue the town of Longmont, which banned fracturing.

Ordinances in Fort Worth,Texas and Farmington, New Mexico (see Chapter 19, Oil and Gas Wells) provide examples of relatively comprehensive local ordinances that address drilling and fracturing.

Several New York courts have allowed towns to ban fracturing despite generally preemptive language in the state's Oil, Gas, and Solution Mining Law, which supersedes "all local laws or ordinances relating to the regulation of the oil, gas, and solution mining industries." N.Y. ENV. LAW § 23-0303. Municipalities wishing to avoid preemption must apparently write their gas regulations as land use laws that happen to limit (or ban) gas development--these, the courts have said, don't "relate to the regulation of . . . gas" but rather to the regulation of land use. See, e.g., Anschutz Exploration v. Town of Dryden (NY 2012). For more discussion of federalism in fracking, see my other .

The University of Colorado's Intermountain Oil and Gas BMP Projectcollects regulations from several states, as does FracFocus. FracFocus adds some editorialization to its regulatory summaries, however, arguing, "The best-suited regulators of hydraulic fracturing are the states." The website is run by the Ground Water Protection Council, a nonprofit association of state regulators, which has spoken out against federal regulation of fracturing in certain areas, and the Interstate Oil and Gas CompactCommission, which receives industry funding for certain events and more clearly opposes federal regulation of fracturing and oil and gas development.

Common law: For a good summary of fracturing litigation, see Keith Hall and Lauren Godshall's article in "The Advocate." The Texas Supreme Court in Coastal Oil & Gas v. Garza held that Garza could not obtain trespass damages for fractures into a formation that drained the gas from the formation; the issue remains open in other states. Plaintiffs in Pennsylvania have alleged nuisance, negligence, trespass, and strict liability, among other claims, as a result of contamination from drilling and fracturing. The courts, which have not yet had the opportunity to reach the substance of these claims in the cases I'm aware of, have noted that it is not yet clear whether gas drilling is an abnormally dangerous activity in Pennsylvania. See, e.g., Fiorentino v. Cabot, 750 F.Supp.2d 506 (M.D. Pa. 2010). Federal district courts addressing cases that arise in Arkansas also have not yet determined whether fracking is abnormally dangerous. See, e.g., Tucker v. Southwestern Energy Co., 2012 WL 528253 (E.D. Ark. 2012).

EPA & Hydraulic Fracturing - Dec. 15 to 20

2e. Data on enforcement of oil and gas and environmental laws at well sites, and types of violations

The Arkansas Public Policy Panel found a number of stormwater violations at Fayetteville Shale sites.

The Pennsylvania Department of Environmental Protection's compliance database allows you to create spreadsheets of all violations at Marcellus Shale sites (select "Oil and Gas Compliance Report" from the menu on the right. From the dropdown menu, select "unconventional only" "Yes.").

The New Mexico Oil Conservation Division has a spill database and a list of oil and gas pits that have caused underground water contamination.

I've begun to try to collectand analyze databut am still in the very early stages.

2f. Fracking theory

Professor David Spence, University of Texas, has a great piece on federalism in fracking, arguing that many of the effects are local and that for impacts that don't cross state lines, local control is generally good.

Professor Michael Burger has an excellent reply to Spence forthcoming in PENNumbra.

In an op-ed, Professor Jody Freeman has argued for implementation of federal fracturing standards with a cooperative federalism approach.

I'm working on a piece that argues that when regulations are written, rule writers balance the cost of regulation against anticipated harms with a certain scale of activity in mind, and they fail to anticipate or automatically account for needed regulatory changes when scale rapidly changes, as has occurred with drilling and fracturing. Agencies and regulations need to better project scalar change and include automatic provisions for seamless transitions to new scales, including automatic increases in agency staffing and provisions to address potential threshold and interactive effects as activities expand in scale. I'll post this on SSRN soon and will welcome critiques and suggestions.

3. Best practices and needed regulatory changes

The Marcellus Shale Advisory Commission Final Report made a number of recommendations for changes, such as increasing civil penalties for well violations and improving various casing and substantive requirements, many of which Pennsylvania adopted in the disputed Act 13 (House Bill 1950).

The Secretary of Energy Advisory Board Shale Gas Production Subcommittee 90-day report recommends, among other things, disclosure of fracturing fluids, not using diesel in fracturing and reducing the use of diesel in drilling and fracturing equipment, and "managing short-term and cumulative impacts on communities, land use, wildlife, and ecologies." The final reportmakes similar and more detailed recommendations.

The State Review of Oil and Natural Gas Environmental Regulations--a public-private group that took on the responsibilities of a predecessor group after the EPA exempted most oil and gas wastes from Subtitle C of the Resource Conservation and Recovery Act--has guidelines for hydraulic fracturingand drilling. It has conducted a number of voluntary reviews of states' hydraulic fracturing regulations (for the states that have agreed to be reviewed) and has recommended improvements in regulation and enforcement.

The American Petroleum Institute has a number of standards and guidelines for drilling and fracturing, including, for example, "Water Management Associated with Hydraulic Fracturing."

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This is only a partial list, but I hope that it's useful. Happy holidays to all.

--Hannah Wiseman

http://www.typepad.com/services/trackback/6a00d8341bfae553ef017c 349a7b09970b

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EPA Slated To Provide Early Look At Draft Fracking Study, Inside EPA Weekly Report

12/17/2012

EPA is slated to provide some early indications of its long-awaited study on the risks posed by hydraulic fracturing to drinking water resources, which could lay the ground for development of new federal regulatory policies in President Obama's second term.

The agency is also facing a settlement deadline to issue revisions to its cement sector air toxics rule.

At EPA
Mandated by Congress in EPA's fiscal year 2010 budget, the agency's highly anticipated study on the drinking water risks posed by fracking -- the injection of chemical-laced fluids to extract oil and gas -- is expected to set a benchmark for whether EPA needs to regulate the injection practice and whether Congress needs to amend current law to provide that authority.

According to EPA's website, the agency is slated to release its progress report on the study in December, though sources say they are expecting the progress report the week of Dec. 17. The study is expected to be completed in 2014.

One industry official said recently that if EPA decides, based on the final study results, to make the case for expanding federal oversight of hydraulic fracturing, the Safe Drinking Water Act (SDWA) would be the most logical place to do that -- though the industry is opposed to such an approach and Congress would first need to reverse a statutory exemption before the agency could regulate the practice.

Given what is at stake, the study has already proven contentious. Industry groups and members of Congress have urged the agency to narrow the study's scope and to step up scientific scrutiny before the study goes final.

While industry has long opposed efforts to regulate the injection practice under SDWA, saying the practice is safe, wastewater contamination issues are also a concern. For example, one particularly contentious question is over disposal of fracking wastewater and how broadly EPA is considering the issue.

EPA's science advisors, for example, had urged the agency to consider wastewater disposal practices, though EPA decided that it would only consider whether there is inadequate treatment at municipal and industrial treatment facilities for wastewater from fracking.

At technical meetings held last month, environmentalists called for the agency to broaden its pending assessment to review controversial wastewater disposal to underground reservoirs -- where the majority of wastewater from the industry is disposed, rather than just the limited releases to treatment facilities that EPA is currently reviewing.

But EPA told the advocates that the agency will not do such research as part of the pending study -- but rather as part of broader research it is conducting with other federal agencies.

EPA & Hydraulic Fracturing - Dec. 15 to 20

More On Anticipated EPA Fracking Study
Center For Environment, Commerce & Energy

12/17/2012

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$90 Billion U.S. Investment Spurring Shale Gas 'Revolution'
Breitbart.com

12/17/2012

by Wynton Hall 17 Dec 2012, 5:14 AM PDT

America may yet "frack" its way to prosperity.

According to Dow Chemical, in the past two years, manufacturers have poured $90 billion in U.S. investments into natural gas, sparking what the Financial Times calls a "shale revolution" that "appears to be driving the country's industrial renaissance."

The multi-billion dollar corporate investments in shale gas have helped spur manufacturing advancements in horizontal drilling and hydraulic fracturing (also known as "fracking") technologies designed to access trapped gas lodes.

"This revolution is creating great opportunities to increase manufacturing capability, and has tremendous potential for economic impact and job creation," said Phillips 66 chief executive Greg Garland.

The flood of U.S. investment cash in shale gas has caught Europe flat-footed, says the Financial Times:

The U.S. investment boom has caused concern among manufacturers in Europe, who fear they will find it difficult to compete in energy-intensive sectors. The British government set out an attempt to launch its own shale gas industry last week to help revive the moribund economy.

The shale boom is reinforcing other trends that are also increasing the competitiveness of U.S. manufacturing, including relatively slow wage growth.

Indeed, last week the United Kingdom cleared the use of "fracking."

Whether the U.S. natural gas revolution will come full bloom remains to be seen. But Mr. Obama has already displayed a level of political flexibility on fracking, given its economic promise. In May, Mr. Obama quietly eased up on important fracking regulations that would have slowed energy exploration in Ohio.

Likewise, Mr. Obama's liberal base has shown a willingness to bend its environmental opposition to fracking when profitable. In 2008 and 2009, the leftist think tank Center for American Progress accepted $453,250 from natural gas billionaire T. Boone Pickens.

Some environmentalists seem to have looked the other way and given Mr. Obama a pass on his fracking stance. "I understand Obama's position, politically. The regulations have been quite a bit less than I would desire, but they would be infinitely [less] under Republicans," says Dave Simons, former chairman of the Sierra Club conservation group's Ohio panel on fracking. "Economic times are tough. There is big money in this, and ... [people] are willing to take a chance on this."

The future of the natural gas revolution also stands to be affected by a study currently being conducted by President Barack Obama's Environmental Protection Agency (EPA) on "hydraulic fracturing and its potential impact on drinking water resources." The EPA's final report is slated for release in 2014.

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Hydraulic Fracturing
Environmental Protection

12/17/2012

Hydraulic fracturing is a process associated with deep natural gas extraction. Millions of gallons of water, sand and chemicals are injected, under high pressure, into a well. The pressure fractures the shale and opens fissures that enable natural gas to flow more freely out of the well.

Typically, 80 to 300 tons of chemicals may be used.

In 2005, the Bush/Cheney Energy Bill exempted natural gas drilling from the Safe Drinking Water Act. Companies do not have to disclose the chemicals used during hydraulic fracturing, but independent scientists have identified volatile organic compounds, such as benzene, toluene, ethylbenzene and xylene. As such, the wastewater can be toxic and may cause various chronic health issues and contaminate the air, water wells or surface water.

The Fracturing Responsibility and Awareness of Chemicals Act (H.R. 2766), (S. 1215), introduced in 2009, aims to close this loophole by repealing the exemption and require the disclosure of the chemicals involved with hydraulic fracturing. This bill has not yet been passed.

Oil & Gas Industry's 2011 Environmental Spending Pegged at $12.9 BillionDec 17, 2012

A new API report also says 35 percent of the environmental spend, or $4.5 billion, in 2011 went toward air pollution abatement. more

EP 2012 New Product of the Year Winners AnnouncedNov 16, 2012

Researchers Find Substantial Water Pollution Risks From Fracking to Recover Natural GasAug 07, 2012

Ecologix Environmental Systems Introduces New Standard in Chemical Treatment for Hydraulic FracturingMay 11, 2012

California to Propose New Fracking Rules and Review Agency Insight of Injection WellsMay 11, 2012

Study Shows Air Emissions Near Fracking Sites May Impact HealthMar 19, 2012

New Study Shows No Evidence of Groundwater Contamination from Hydraulic FracturingFeb 17, 2012

Fracking: Financial Fuel for America's FutureJan 31, 2012

Clean Air Council Says Pennsylvania DEP Failed to Regulate Fracking Pollution, EPA Should Step InDec 29, 2011

After Years of Fracking, Pennsylvanians Remain Mixed About Gas DrillingDec 16, 2011

Blog Posts

Marathon Oil's Eagle Ford Operations in TexasOct 01, 2012

Marathon Oil's Eagle Ford Asset Manager Kirk Spilman highlights the Company's activity in this important liquids-rich play, and the opportunity for continued growth. Marathon has Eagle Ford offices in San Antonio, Kenedy, Pleasanton,

EPA & Hydraulic Fracturing - Dec. 15 to 20

and Gonzales. more

Using Hydraulic Fracturing and Horizontal Drilling for Natural Gas ProductionSep 24, 2012

Geologists have long known about huge natural gas deposits trapped in shale rock formations, but it is only over the past decade that energy companies have combined two established technologies to unlock this resource. See how Chevron uses horizontal drilling and hydraulic fracturing to safely produce natural gas from shale. more

Hydraulic Fracturing SafetyFeb 20, 2012

Researchers from The Energy Institute at the University of Texas at Austin spoke to The Guardian U.K. about their report into the possible environmental effects of hydraulic fracturing. more

South Africa Faces Environmental Concerns Over FrackingJun 27, 2011

Al Jazeera English reports on the threat hyraulic fracturing may have on South Africa's farming economy. more

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Energy experts say drilling can be made cleaner
Austin American-Statesman - Online

12/16/2012

In the Colorado mountains, a spike in air pollution has been linked to a boom in oil and gas drilling. A thousand miles away on the plains of north Texas, there's a drilling boom, too, but some air pollution levels have declined. Opponents of drilling point to Colorado and say it's dangerous. Companies point to Texas and say drilling is safe.

The answer appears to be that drilling can be safe or it can be dangerous. Industry practices, enforcement, geography and even snow cover can minimize or magnify air pollution problems.

"It's like a vehicle. Some cars drip oil," said Russell Schnell, deputy director of the federal Earth System Research Laboratory in Boulder, Colo. "You have wells that are absolutely tight. And you have other places where a valve gives out, and you have huge leaks."

The good news, nearly all sides agree, is that the technology exists to control methane gas leaks and other air pollution associated with drilling. The bad news is that the industry is booming so rapidly that some companies and some regulators can't seem to get ahead of the problems, which could ultimately cost billions of dollars to remedy.

The worries about what drilling does to the air are both global and local, with scientists concerned about the effects on climate change as well as the possible health consequences from breathing smog, soot and other pollutants.

Hydraulic fracturing, or fracking, has made it possible to tap into deep reserves of oil and gas but has also raised concerns about pollution. The industry and many federal and state officials say the practice is safe when done properly, but environmental groups and some scientists say there hasn't been enough research.

Some environmentalists say if leaks and pollution can be minimized, the boom has benefits, since gas burns much cleaner than coal, emitting half the carbon dioxide.

Al Gore told The Associated Press that it's "not irresponsible" to look at gas as a short-term substitute for coal-fired electricity. But Gore added that the main component of gas, methane, is a more potent heat-trapping greenhouse gas than CO2. That means that if large quantities leak, the advantage over coal disappears, the former vice president said.

In Colorado, the National Oceanic and Atmospheric Administration estimated that 4 percent of methane was leaking from wells, far more than previously estimated, and that people who live near production areas may be exposed to worrisome levels of benzene and other toxic compounds present in oil and gas.

Across the industry, the technology for stopping leaks can be as simple as fixing seals and gaskets, or it can involve hundreds of millions of dollars of new construction.

"I think it's totally fixable," Schnell said. "At least the bigger companies, they are really on top of this."

Gore added that when companies capture leaking methane, they end up with more to sell. "So there's an economic incentive to capture it and stop the leaking," he said.

Another major source of worry is the industry's practice of burning off, or flaring, natural gas that comes out of the ground as a byproduct of oil drilling. Over the past five years, the U.S. has increased the amount of flared and wasted gas more than any other nation, though Russia still burns off far more than any other country.

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In some places, energy companies haven't invested in the infrastructure needed to capture and process the gas because the oil is more valuable.

In the Bakken Shale oil fields of North Dakota, for example, about 30 percent of the natural gas is flared off because there aren't enough pipelines yet to carry it away. The amount of gas wasted in the state is estimated at up to $100 million a year. And officials in North Dakota said last month that the situation there might not be completely solved until the end of the decade.

NOAA scientists also say natural gas production has contributed to unusual wintertime smog in the West, particularly in regions surrounded by mountains, and especially in snowy areas.

Ozone, the main component in smog, typically forms when sunlight "cooks" a low-lying stew of chemicals such as benzene and engine exhaust. Normally, the process doesn't happen in cold weather.

But NOAA researchers found that when there's heavy snowfall, the sun passes through the stew, then bounces off the snow and heats it again on the way back up. In some cases, smog in remote areas has spiked to levels higher than those in New York or Los Angeles.

In open regions that are more exposed to wind, the ozone vanishes, sometimes within hours or a day. But in Utah basins it can linger for weeks, Schnell said.

Evidence that gas drilling air pollution can be managed — but that more work may still need to be done — comes from north Texas, where the shale gas boom began around Fort Worth about 10 years ago.

Mike Honeycutt, director of toxicology for the Texas Commission on Environmental Quality, said that in the early years of the boom, people complained about excessive pollution. Regulators started using special hand-held cameras to pinpoint pollution sources and found some sites with high levels of benzene and other volatile organic compounds.

"It was a maintenance issue. They were in such a hurry, and they were drilling so fast, they were not being as vigilant as they should have been," Honeycutt said. "So we passed new rules that made them take more notice."

Honeycutt said the cameras, which cost about $100,000 each, have revolutionized the way inspectors monitor sites. Texas has also installed nine 24-hour air monitoring stations in the drilling region around Fort Worth, and more are on the way. Now, he said, even as drilling has increased, summer ozone levels have declined.

In 1997 there were only a few hundred shale gas wells in the Fort Worth area and the summertime ozone level hit 104 parts per billion, far above the national standard then of 85. By 2012 the number of wells had risen to about 16,000, but preliminary results show the ozone level was 87 last summer.

There's still room for improvement, Honeycutt said, but the trend is clear, since the monitoring is no longer showing worrisome levels of benzene, either.

The Environmental Protection Agency isn't completely convinced. This year the federal agency cited Wise County in north Texas, a heavy gas drilling area, for violating ozone standards. Industry groups and the state have argued that the finding was based on faulty science.

So far, NOAA scientists say they haven't found signs that gas or oil drilling is contributing to a global rise in methane.

"Not the mid-latitudes where the drilling is being done, which is interesting," said James Butler, head of global monitoring

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for NOAA.

The EPA has passed new rules on oil and gas emissions that are scheduled to go into effect in 2015, and in 2012 it reached legal settlements that will require companies to spend more than $14 million on pollution controls in Utah and Wyoming. Colorado, Texas and other states have passed more stringent rules, too.

Carlton Carroll, a spokesman for the American Petroleum Institute, a lobbying group for the oil and gas industry, pointed out that many companies started developing the equipment to limit methane and other pollution before the EPA rule.

"API is not opposed to controls on oil and gas operations so long as the controls are cost-effective, allow sufficient lead time and can be implemented safely," Carroll said in an email, adding that the industry has requested some technical clarifications to the rule and is working with EPA on those.

Prasad Kasibhatla, a professor of environmental chemistry at Duke University, said that controlling gas drilling pollution is "technically solvable" but requires close attention by regulators.

"One has to demonstrate that it is solved, and monitored," he said.

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2012's Forgotten Story
Swans Commentary

12/16/2012

(Swans - December 17, 2012) There was a great deal of talk about the weather in 2012, but the impact of climate change, and any significant efforts to address it, were noticeably absent from the official discourse. It certainly wasn't on the agenda of the US presidential election, nor did the U.S. commit any funds at this month's UN Climate Summit in Doha to help developing nations meet their emissions reductions goals -- it has never even ratified the Kyoto protocol. China and India have yet to make any binding commitments to curb emissions, so Russia, Canada, and Japan have pulled out. As Greenpeace executive director Kumi Naidoo was quoted as saying that "the winners have largely been the fossil fuel industries -- oil, coal and gas companies." Ironically, given the widespread economic crisis that continued to garner the world's attention in 2012, the costs of this year's droughts, fires, hurricanes, and floods are staggering and only stand to rise without serious action. More ironically still, the solution to curbing climate change may come from an otherwise unexpected source.

According to a Thinkprogress report, Hurricane Sandy's devastating economic effects are currently estimated at $42 billion in New York and $29.5 billion in New Jersey. The 2012 US drought could cause up to $77 billion in costs, and Deutsche Bank's chief U.S. economist predicts that reduced crop sales resulting from the drought could reduce economic growth by up to 1 percent.

The current scientific guidance is that any global temperature rise needs to stay below 2 degrees Celsius this century -- a target that would require drastic changes that are, as of yet, not being implemented. The UN Environment Programme (UNEP) Emissions Gap Report 2012 indicates that a delay beyond 2020 would increase considerably the costs of making future reductions of emissions, and "that even if the most ambitious level of pledges and commitments were implemented by all countries -- and under the strictest set of rules -- there would be a gap of 8 Gt [gigatons] of CO2 equivalent by 2010. This is 2 Gt higher than last year's assessment. Emissions reductions need to be made in the agricultural, forestry, power, buildings, transportation, and waste sectors to meet emissions reduction targets."

In November UNEP issued a report titled Policy Implications of Warming Permafrost, a phenomenon that has not previously been factored in to climate change modeling, but which stands to have a significant impact. Permafrost, which covers about a quarter of the Northern Hemisphere, contains huge quantities of carbon dioxide and methane, and its melting will release these emissions into the atmosphere. According to UNEP, "Once this process begins, it will operate in a feedback loop known as the permafrost carbon feedback, which as the effect of increasing surface temperatures and thus accelerating the further warming of permafrost - a process that would be irreversible on human timescales." In addition, infrastructure and habitat damage would occur in the permafrost regions.

Extreme weather patterns

A Center for American Progress report, Heavy Weather: How Climate Destruction Harms Middle- and Lower-Income Americans, summarizes the extreme weather patterns in 2012, which of course, disproportionately affect those with lower incomes, not only in the U.S. but globally.

September 2011 to August 2012 was the hottest 12-month period in U.S. history.

Half of the United States is still in moderate drought or worse as of November 1, 2012.

September 2012 was the driest month for Montana, North Dakota, and South Dakota in 118 years of recordkeeping.

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The 2012 wildfire season was the worst in decades and broke records across multiple states [Colorado, New Mexico, Montana]. Since 2011 more than 126,179 fires have burned 17.7 million U.S. acres -- roughly the area of Massachusetts, New Hampshire, and Vermont combined.

The 2011-12 ski season was the worst in 20 years due to an average snowfall that was 41 percent lower than the previous winter season.

This report was limited to the United States, so it did not discuss the melting of Arctic sea ice, which reached a new record low around the North Pole with an area bigger than the U.S. -- 4.57 million square miles (11.83 million square kilometers) melting between March and September, according to the World Meteorological Organization findings. This news, along with that on the permafrost melt, threatens the target of limiting temperatures rises to 2 degrees C -- we're nearly half way there at 0.8 degrees.

Add to the year's events the deep freeze in eastern Europe; widespread flooding in Pakistan, the UK, western Africa, Russia and Argentina; drought in Russia, southeast Europe, China, and Brazil; and the recent Philippines typhoon, and it's been a destructive and costly year in dollars and lives. Expect another extreme climate year ahead, and perhaps a day when the phrases "natural disaster" and "man-made disaster" will be indistinguishable.

Who is behind the ongoing climate-change denial?

The Union of Concerned Scientists (UCS) evaluated media reporting on global warming and found that "Ninety-three percent of Fox News Channel's representations of climate science were misleading from February 2012 to July 2012 (37 out of 40 references). The most common form of criticism regarding climate science was to broadly dismiss the scientific consensus that climate change is occurring or human-induced. Misleading representations also included 10 instances in which a panel member expressed acceptance of climate science findings, but was drowned out by hosts or other panel members responding with multiple misleading claims." According to the same report, a major newspaper was no better. "Eighty-one percent of letters, op-eds, columns, and editorials in the Wall Street Journal's opinion page were misleading on climate science from August 2011 to July 2012 (39 of 48 references)...Instances of attacks on individual scientists, mocking the science, and cherry picking data were all equally common. Denigration of climate science was routine. Instances included accusations that scientists were fudging data and claims that they are motivated by financial self-interest."

Also according to the UCS, renewable electricity standards "...are being challenged by state legislators affiliated with the American Legislative Exchange Council (ALEC), which has financial links to the Koch brothers. ALEC works with corporations including Duke Energy, Entergy, Progress Energy, and other utilities to ghostwrite legislation on a wide range of issues. So far, ALEC members have introduced bills to repeal renewable electricity standards in Colorado, Michigan, Montana, Ohio, Washington, West Virginia, and Wisconsin." In September, the Koch brothers' Americans for Prosperity organization joined other like-minded groups in sending "a letter to Congress opposing the extension [of the wind production tax credit], arguing that it 'continues the deplorable practice of using the tax code to favor certain groups over others.'" Look to the energy lobby to continue to wage war on climate change regulations while its industries continue their high-profit, highly polluting practices.

Progress

It's easy to compile a summary of global warming effects and extreme weather events; it's more difficult to find information on progress, or success stories. However, more and more cities, particularly in New York and New Jersey, are passing anti-fracking measures as the details of this chemical-laden process slowly leak out into the public forum. The US Environmental Protection Agency is evaluating the potential impacts of hydraulic fracturing on drinking water and ground water, though critics argue the EPA's statement of the potential problem was downplayed due to external pressure, and no doubt the results, due in 2014, will be subject to heavy energy-lobby scrutiny. Car manufacturers in the

EPA & Hydraulic Fracturing - Dec. 15 to 20

U.S. are slowly introducing more fuel-efficient vehicles, though we're still far behind the technology. Brazil's ambitious reforestation project is showing early success, and is reviving local economies as well. But the most encouraging news of all is that the US Department of Defense, the country's single biggest energy user, is going green, putting forth what looks to be a serious effort to develop alternative energy. Of course, their motivation is to "help ensure an agile, lethal and adaptable combat force, and ultimately, national security," but we know from the past that many of the world's technical and scientific advances, including the one through which you're reading this article, were an outgrowth of military research. If that's what it takes for America to get serious on alternative energy, then more power to the military.

Conclusion

We've made very little progress on curtailing greenhouse gases and addressing the threat of climate change. Until we have a global commitment on behalf of all nations, including the most egregious polluters, to willfully make the necessary adjustments to limit industrial and agricultural emissions and turn to real clean energy alternatives, we'll continue through 2013 and beyond down a course that will be difficult, if even possible, to reverse. It is left to individuals and local regulators to implement environmental protections, and we must all continue our efforts to influence our leadership to take this matter seriously on a large scale. The Union of Concerned Scientists is a powerful and credible organization and an excellent source of information worth backing. And keep an eye on where that US military spending is going.

If you find Jan Baughman's work valuable, please consider helping us

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About the Author

Jan Baughman on Swans -- with bio. She is Swans co-editor. (back)

Internal Resources

This edition's other articles

Check the front page, where all current articles are listed.

Also...

Check our past editions, where the past remains very present.

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2012's Forgotten Story
Swans Commentary

12/16/2012

Swans Commentary >> swans.com

December 17, 2012

Perspectives: A Review of 2012

2012's Forgotten Story

by Jan Baughman

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According to a Thinkprogress report , Hurricane Sandy's devastating economic effects are currently estimated at $42 billion in New York and $29.5 billion in New Jersey. The 2012 US drought could cause up to $77 billion in costs, and Deutsche Bank's chief U.S. economist predicts that reduced crop sales resulting from the drought could reduce economic growth by up to 1 percent.

The current scientific guidance is that any global temperature rise needs to stay below 2 degrees Celsius this century -- a target that would require drastic changes that are, as of yet, not being implemented. The UN Environment Programme (UNEP) Emissions Gap Report 2012 indicates that a delay beyond 2020 would increase considerably the costs of making future reductions of emissions, and "that even if the most ambitious level of pledges and commitments were implemented by all countries -- and under the strictest set of rules -- there would be a gap of 8 Gt [gigatons] of CO2 equivalent by 2010. This is 2 Gt higher than last year's assessment. Emissions reductions need to be made in the agricultural, forestry, power, buildings, transportation, and waste sectors to meet emissions reduction targets."

In November UNEP issued a report titled Policy Implications of Warming Permafrost, a phenomenon that has not previously been factored in to climate change modeling, but which stands to have a significant impact. Permafrost, which covers about a quarter of the Northern Hemisphere, contains huge quantities of carbon dioxide and methane, and its melting will release these emissions into the atmosphere. According to UNEP, "Once this process begins, it will operate in a feedback loop known as the permafrost carbon feedback, which as the effect of increasing surface temperatures and thus accelerating the further warming of permafrost - a process that would be irreversible on human timescales." In addition, infrastructure and habitat damage would occur in the permafrost regions.

Extreme weather patterns

EPA & Hydraulic Fracturing - Dec. 15 to 20

A Center for American Progress report, Heavy Weather: How Climate Destruction Harms Middle- and Lower-Income Americans , summarizes the extreme weather patterns in 2012, which of course, disproportionately affect those with lower incomes, not only in the U.S. but globally.

September 2011 to August 2012 was the hottest 12-month period in U.S. history.

Half of the United States is still in moderate drought or worse as of November 1, 2012.

September 2012 was the driest month for Montana, North Dakota, and South Dakota in 118 years of recordkeeping.

The 2012 wildfire season was the worst in decades and broke records across multiple states [Colorado, New Mexico, Montana]. Since 2011 more than 126,179 fires have burned 17.7 million U.S. acres -- roughly the area of Massachusetts, New Hampshire, and Vermont combined.

The 2011-12 ski season was the worst in 20 years due to an average snowfall that was 41 percent lower than the previous winter season.

This report was limited to the United States, so it did not discuss the melting of Arctic sea ice, which reached a new record low around the North Pole with an area bigger than the U.S. -- 4.57 million square miles (11.83 million square kilometers) melting between March and September, according to the World Meteorological Organization findings. This news, along with that on the permafrost melt, threatens the target of limiting temperatures rises to 2 degrees C -- we're nearly half way there at 0.8 degrees.

Add to the year's events the deep freeze in eastern Europe; widespread flooding in Pakistan, the UK, western Africa, Russia and Argentina; drought in Russia, southeast Europe, China, and Brazil; and the recent Philippines typhoon, and it's been a destructive and costly year in dollars and lives. Expect another extreme climate year ahead, and perhaps a day when the phrases "natural disaster" and "man-made disaster" will be indistinguishable.

Who is behind the ongoing climate-change denial?

The Union of Concerned Scientists (UCS) evaluated media reporting on global warming and found that "Ninety-three percent of Fox News Channel's representations of climate science were misleading from February 2012 to July 2012 (37 out of 40 references). The most common form of criticism regarding climate science was to broadly dismiss the scientific consensus that climate change is occurring or human-induced. Misleading representations also included 10 instances in which a panel member expressed acceptance of climate science findings, but was drowned out by hosts or other panel members responding with multiple misleading claims." According to the same report, a major newspaper was no better. "Eighty-one percent of letters, op-eds, columns, and editorials in the Wall Street Journal's opinion page were misleading on climate science from August 2011 to July 2012 (39 of 48 references)...Instances of attacks on individual scientists, mocking the science, and cherry picking data were all equally common. Denigration of climate science was routine. Instances included accusations that scientists were fudging data and claims that they are motivated by financial self-interest."

Also according to the UCS, renewable electricity standards "...are being challenged by state legislators affiliated with the American Legislative Exchange Council (ALEC), which has financial links to the Koch brothers. ALEC works with corporations including Duke Energy, Entergy, Progress Energy, and other utilities to ghostwrite legislation on a wide range of issues. So far, ALEC members have introduced bills to repeal renewable electricity standards in Colorado, Michigan, Montana, Ohio, Washington, West Virginia, and Wisconsin." In September, the Koch brothers' Americans for Prosperity organization joined other like-minded groups in sending "a letter to Congress opposing the extension [of the wind production tax credit], arguing that it 'continues the deplorable practice of using the tax code to favor certain groups over others.'" Look to the energy lobby to continue to wage war on climate change regulations while its industries

continue their high-profit, highly polluting practices.

Progress

It's easy to compile a summary of global warming effects and extreme weather events; it's more difficult to find information on progress, or success stories. However, more and more cities, particularly in New York and New Jersey, are passing anti-fracking measures as the details of this chemical-laden process slowly leak out into the public forum. The US Environmental Protection Agency is evaluating the potential impacts of hydraulic fracturing on drinking water and ground water, though critics argue the EPA's statement of the potential problem was downplayed due to external pressure, and no doubt the results, due in 2014, will be subject to heavy energy-lobby scrutiny. Car manufacturers in the U.S. are slowly introducing more fuel-efficient vehicles, though we're still far behind the technology. Brazil's ambitious reforestation project is showing early success, and is reviving local economies as well. But the most encouraging news of all is that the US Department of Defense, the country's single biggest energy user, is going green, putting forth what looks to be a serious effort to develop alternative energy. Of course, their motivation is to "help ensure an agile, lethal and adaptable combat force, and ultimately, national security," but we know from the past that many of the world's technical and scientific advances, including the one through which you're reading this article, were an outgrowth of military research. If that's what it takes for America to get serious on alternative energy, then more power to the military.

Conclusion

We've made very little progress on curtailing greenhouse gases and addressing the threat of climate change. Until we have a global commitment on behalf of all nations, including the most egregious polluters, to willfully make the necessary adjustments to limit industrial and agricultural emissions and turn to real clean energy alternatives, we'll continue through 2013 and beyond down a course that will be difficult, if even possible, to reverse. It is left to individuals and local regulators to implement environmental protections, and we must all continue our efforts to influence our leadership to take this matter seriously on a large scale. The Union of Concerned Scientists is a powerful and credible organization and an excellent source of information worth backing. And keep an eye on where that US military spending is going.

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If you find Jan Baughman's work valuable, please consider

EPA & Hydraulic Fracturing - Dec. 15 to 20

Energy experts say drilling can be made cleaner
Abilene Reporter-News - Online

12/16/2012

By Kevin Begos and Seth Borenstein Associated Press

Posted December 15, 2012 at 8:56 p.m.

FILE - In this Aug. 19, 2008 file photo, a combine cuts durum near an oil well on Aug. 19, 2008, in Tioga, N.D. The worries about what drilling does to the air are both global and local, with scientists concerned about the effects on climate change as well as the possible health consequences from breathing smog, soot and other pollutants. (AP Photo/James MacPherson, file)

PITTSBURGH — In the Colorado mountains, a spike in air pollution has been linked to a boom in oil and gas drilling. A thousand miles away on the plains of north Texas, there's a drilling boom, too, but some air pollution levels have declined. Opponents of drilling point to Colorado and say it's dangerous. Companies point to Texas and say drilling is safe.

The answer appears to be that drilling can be safe or it can be dangerous. Industry practices, enforcement, geography and even snow cover can minimize or magnify air pollution problems.

"It's like a vehicle. Some cars drip oil," said Russell Schnell, deputy director of the federal Earth System Research Laboratory in Boulder, Colo. "You have wells that are absolutely tight. And you have other places where a valve gives out, and you have huge leaks."

The good news, nearly all sides agree, is that the technology exists to control methane gas leaks and other air pollution associated with drilling. The bad news is that the industry is booming so rapidly that some companies and some regulators can't seem to get ahead of the problems, which could ultimately cost billions of dollars to remedy.

The worries about what drilling does to the air are both global and local, with scientists concerned about the effects on climate change as well as the possible health consequences from breathing smog, soot and other pollutants.

Hydraulic fracturing, or fracking, has made it possible to tap into deep reserves of oil and gas but has also raised concerns about pollution. The industry and many federal and state officials say the practice is safe when done properly, but environmental groups and some scientists say there hasn't been enough research.

Some environmentalists say if leaks and pollution can be minimized, the boom has benefits, since gas burns much cleaner than coal, emitting half the carbon dioxide.

Al Gore told The Associated Press that it's "not irresponsible" to look at gas as a short-term substitute for coal-fired electricity. But Gore added that the main component of gas, methane, is a more potent heat-trapping greenhouse gas than CO2. That means that if large quantities leak, the advantage over coal disappears, the former vice president said.

In Colorado, the National Oceanic and Atmospheric Administration estimated that 4 percent of methane was leaking from wells, far more than previously estimated, and that people who live near production areas may be exposed to worrisome levels of benzene and other toxic compounds present in oil and gas.

Across the industry, the technology for stopping leaks can be as simple as fixing seals and gaskets, or it can involve

hundreds of millions of dollars of new construction.

"I think it's totally fixable," Schnell said. "At least the bigger companies, they are really on top of this."

Gore added that when companies capture leaking methane, they end up with more to sell. "So there's an economic incentive to capture it and stop the leaking," he said.

Another major source of worry is the industry's practice of burning off, or flaring, natural gas that comes out of the ground as a byproduct of oil drilling. Over the past five years, the U.S. has increased the amount of flared and wasted gas more than any other nation, though Russia still burns off far more than any other country.

In some places, energy companies haven't invested in the infrastructure needed to capture and process the gas because the oil is more valuable.

In the Bakken Shale oil fields of North Dakota, for example, about 30 percent of the natural gas is flared off because there aren't enough pipelines yet to carry it away. The amount of gas wasted in the state is estimated at up to $100 million a year. And officials in North Dakota said last month that the situation there might not be completely solved until the end of the decade.

NOAA scientists also say natural gas production has contributed to unusual wintertime smog in the West, particularly in regions surrounded by mountains, and especially in snowy areas.

Ozone, the main component in smog, typically forms when sunlight "cooks" a low-lying stew of chemicals such as benzene and engine exhaust. Normally, the process doesn't happen in cold weather.

But NOAA researchers found that when there's heavy snowfall, the sun passes through the stew, then bounces off the snow and heats it again on the way back up. In some cases, smog in remote areas has spiked to levels higher than those in New York or Los Angeles.

In open regions that are more exposed to wind, the ozone vanishes, sometimes within hours or a day. But in Utah basins it can linger for weeks, Schnell said.

Evidence that gas drilling air pollution can be managed — but that more work may still need to be done — comes from north Texas, where the shale gas boom began around Fort Worth about 10 years ago.

Mike Honeycutt, director of toxicology for the Texas Commission on Environmental Quality, said that in the early years of the boom, people complained about excessive pollution. Regulators started using special hand-held cameras to pinpoint pollution sources and found some sites with high levels of benzene and other volatile organic compounds.

"It was a maintenance issue. They were in such a hurry, and they were drilling so fast, they were not being as vigilant as they should have been," Honeycutt said. "So we passed new rules that made them take more notice."

Honeycutt said the cameras, which cost about $100,000 each, have revolutionized the way inspectors monitor sites. Texas has also installed nine 24-hour air monitoring stations in the drilling region around Fort Worth, and more are on the way. Now, he said, even as drilling has increased, summer ozone levels have declined.

In 1997 there were only a few hundred shale gas wells in the Fort Worth area and the summertime ozone level hit 104 parts per billion, far above the national standard then of 85. By 2012 the number of wells had risen to about 16,000, but preliminary results show the ozone level was 87 last summer.

EPA & Hydraulic Fracturing - Dec. 15 to 20

There's still room for improvement, Honeycutt said, but the trend is clear, since the monitoring is no longer showing worrisome levels of benzene, either.

The Environmental Protection Agency isn't completely convinced. This year the federal agency cited Wise County in north Texas, a heavy gas drilling area, for violating ozone standards. Industry groups and the state have argued that the finding was based on faulty science.

So far, NOAA scientists say they haven't found signs that gas or oil drilling is contributing to a global rise in methane.

"Not the mid-latitudes where the drilling is being done, which is interesting," said James Butler, head of global monitoring for NOAA.

The EPA has passed new rules on oil and gas emissions that are scheduled to go into effect in 2015, and in 2012 it reached legal settlements that will require companies to spend more than $14 million on pollution controls in Utah and Wyoming. Colorado, Texas and other states have passed more stringent rules, too.Carlton Carroll, a spokesman for the American Petroleum Institute, a lobbying group for the oil and gas industry, pointed out that many companies started developing the equipment to limit methane and other pollution before the EPA rule.

"API is not opposed to controls on oil and gas operations so long as the controls are cost-effective, allow sufficient lead time and can be implemented safely," Carroll said in an email, adding that the industry has requested some technical clarifications to the rule and is working with EPA on those.

Prasad Kasibhatla, a professor of environmental chemistry at Duke University, said that controlling gas drilling pollution is "technically solvable" but requires close attention by regulators.

"One has to demonstrate that it is solved, and monitored," he said.

EPA & Hydraulic Fracturing - Dec. 15 to 20

Overnight News Digest: Science Saturday (Two Higgs Bosons? edition)
DAILY KOS

12/16/2012

Welcome to Science Saturday, where the Overnight News Digest crew, consisting of founder Magnifico, regular editors jlms qkw, maggiejean, wader, Oke, rfall, and JML9999, alumni editors palantir, Bentliberal, and ScottyUrb, guest editor annetteboardman, and current editor-in-chief Neon Vincent, along with anyone else who reads and comments, informs and entertains you with this week's news about science, space, and the environment.

This week's featured story comes from Scientific American.

A month ago scientists at the Large Hadron Collider released the latest Higgs boson results. And although the data held few obvious surprises, most intriguing were the results that scientists didn't share.

The original Higgs data from back in July had shown that the Higgs seemed to be decaying into two photons more often than it should—an enticing though faint hint of something new, some sort of physics beyond our understanding. In November, scientists at the Atlas and LHC experiments updated everything except the two-photon data. This week we learned why.

Yesterday researchers at the Atlas experiment finally updated the two-photon results. What they seem to have found is bizarre—so bizarre, in fact, that physicists assume something must be wrong with it. Instead of one clean peak in the data, they have found two. There seems to be a Higgs boson with a mass of 123.5 GeV (gigaelectron volts, the measuring unit that particle physicists most often use for mass), and another Higgs boson at 126.6 GeV—a statistically significant difference of nearly 3 GeV. Apparently, the Atlas scientists have spent the past month trying to figure out if they could be making a mistake in the data analysis, to little avail. Might there be two Higgs bosons?

More stories after the jump.

Recent Science Diaries and Stories

by cynndara

Slideshows/Videos

The World on Public Radio International: Why One Researcher is Documenting the Damage to Syria's Archaeological Sites

Emma Cunliffe sits in a tiny graduate student's office on the medieval campus of the University of Durham. But her mind is thousands of miles east, in Syria.

Every day she goes online, sometimes for a few hours, to monitor the Facebook feeds of local Syrian groups for word about damaged sites. She'll scroll past horrific photos of dead children till she comes across mention of a new archaeological site that was shelled or plundered. She says it's incredible just how much you can find out from these posts.

"It's a new world online now," she says. "The prevalence of social networking sites like Facebook, ease of access to YouTube, and the way that most people's mobile phones can take video, means that, all those people who are desperate to share information have a real easy way to upload it and make it accessible."

EPA & Hydraulic Fracturing - Dec. 15 to 20

Cunliffe did her Ph.D research on monitoring Syrian archaeological sites with satellite imagery. When fighting turned fierce in Syria, she began to consult imagery much closer to the ground – videos and photos posted by concerned Syrian citizens. Sites were being damaged and also looted.

"As much as some people in an area might loot others will be quite horrified by the fact that's happening," Cunliffe says. "So there are videos, for example, of looting at at least two of the dead cities."

CNN: Sudan: Israeli 'spy vulture' nabbed during reconnaissance mission

By Nick Thompson and Nima Elbagir, CNN

updated 9:41 AM EST, Wed December 12, 2012

(CNN) -- A vulture captured by Sudanese authorities is actually an Israeli spy on a secret reconnaissance mission, a pro-government newspaper in the east African nation has claimed.

Government sources say the vulture, found in western Sudan, was tagged with a GPS-equipped camera to take and send pictures back to Israel, according to a December 8 story in the Alintibaha newspaper.

The bird also wore an ankle label reading "Hebrew University Jerusalem," "Israel Nature Service" and the contact details of an Israeli avian ecologist.

The ecologist, Ohad Hatzofe of the Israel Nature and Parks Authority, has rejected the Sudanese government claims -- saying the vulture, which can fly up to 600 kilometers in a single day, was tagged with GPS equipment to study its migration pattern.

Scientific American: Seeing Bacteria

I got a really fun early Christmas gift yesterday, Moyasimon 1: Tales of Agriculture, a manga series about a boy who can see microbes. His skills lead to some exciting fermentation-related adventures at his agriculture college. I learned a lot about miso, sake, and meats that ferment underground!

NASA Television on YouTube: Countdown to Launch on This Week @NASA

With their launch from Kazakhstan to the International Space Station fast approaching, Expedition 34/35 Soyuz Commander Roman Romanenko, Flight Engineer Tom Marshburn of NASA and Flight Engineer Chris Hadfield of the Canadian Space Agency continue to train and finalize plans for the December 19 flight. Also, Orion taking shape; Mars field trip: GRAIL's impact; FASTSat's finale; "Big Wind"; rocket holiday; and more!

NASA Television on YouTube: ScienceCasts: Why the World Didn't End Yesterday

The Mayan calendar explained! The world is safe from rogue planets, solar flares and other imagined calamities!

Watch this NOW to learn why NASA Science says you'll be here Dec. 22 to view it again!

Astronomy/Space

University of Michigan: An older Vega: New insights about the star all others are measured by

EPA & Hydraulic Fracturing - Dec. 15 to 20

ANN ARBOR—Vega, a star astronomers have used as a touchstone to measure other stars' brightness for thousands of years, may be more than 200 million years older than previously thought. That's according to new findings from the University of Michigan.

The researchers estimated Vega's age by precisely measuring its spin speed with a tool called the Michigan Infrared Combiner, developed by John Monnier, associate professor of astronomy in U-M's College of Literature, Science, and the Arts.

MIRC collects the light gathered by six telescopes to make it appear to be coming through one that's 100 times larger than the Hubble Space Telescope. It's installed at the Georgia State Center for High Angular Resolution Astronomy Array located on Mt. Wilson, California.

Discovery News: Titan's 'Nile River' Discovered

Analysis by Ian O'Neill

The Cassini Solstice mission has discovered what appears to be a miniature version* of the Nile River on Saturn's largest moon, Titan. The 400 kilometer (250 mile) long feature -- from 'headwaters' to a large sea -- is the longest extraterrestrial river ever to be discovered and imaged to such high resolution.

Using Cassini's radar imaging instruments, mission scientists were able to deduce that the feature is indeed a river as the dark, smooth surface within the meanders and channel suggest the presence of a liquid.

weather

Titan is known to have vast lakes -- the only other body in the solar system, apart from Earth, to possess a cycle of liquids on its surface. However, the thick Titan atmosphere is a frigid one, meaning liquid water couldn't possibly flow. The liquids on Titan are therefore composed of hydrocarbons such as methane and ethane.

Space.com: NASA Eyes Mission to Jupiter Moon Europa

Date: 13 December 2012 Time: 04:20 PM ET

SAN FRANCISCO — Though NASA is devoting many of its exploration resources to Mars these days, the agency still has its eye on an icy moon of Jupiter that may be capable of supporting life as we know it.

Last week, NASA officials announced that they plan to launch a $1.5 billion rover to Mars in 2020, adding to a string of Red Planet missions already on the docket. The Curiosity rover just landed this past August, for example, and an orbiter called Maven and a lander named InSight are slated to blast off in 2013 and 2016, respectively.

But NASA is also thinking about ways to investigate the possible habitability of Europa, Jupiter's fourth-largest moon. One concept that may be gaining traction is a so-called "clipper" probe that would make multiple flybys of the moon, studying its icy shell and suspected subsurface ocean as it zooms past.

Discovery News: Chinese Probe Buzzes Asteroid Toutatis

Analysis by Ian O'Neill

The Chinese lunar orbiter Chang'e 2 has completed its flyby of asteroid Toutatis, a five-kilometer (three mile) long space rock that recently had a "close" encounter with Earth.

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The probe, which completed its primary moon-mapping mission in 2011, was commanded to depart lunar orbit in June 2011 and travel to the Earth-sun L2 point -- a region of gravitational stability, approximately 1.5 million kilometers away in the opposite direction of the sun.

This extended mission set it up for the Dec. 13 flyby of asteroid 4179 Toutatis after it was commanded to leave the L2 point earlier this year.

Reuters: U.S. military's secret mini-shuttle lifts off from Florida

(Reuters) - An unmanned Atlas 5 rocket carrying a small robotic space shuttle lifted off from Cape Canaveral Air Force Station in Florida on Tuesday for the third flight in a classified military test program.

The 196-foot (60-meter) rocket blasted off at 1:03 p.m. ET (1603 GMT) carrying the military's original X-37B experimental space plane, also known as an Orbital Test Vehicle, or OTV.

The unmanned, reusable space shuttle, one of two operated by the U.S. Air Force, spent 224 days circling Earth during its debut mission in 2010. A sister ship blasted off in 2011 and landed itself after 469 days in space, completing the second orbital test flight.

Evolution/Paleontology

British Museum of Natural History: Piltdown Man tests could solve hoax

Next week is the 100-year anniversary of the Piltdown Man announcement - that the evolutionary 'missing link' between humans and apes had been found. This was a hoax, and someone, or some people, went to great lengths to try to fool the scientific world. The hoax was discovered but the culprit wasn't, and scientists are now trying to solve this real-life whodunnit once and for all.

A team of 15 scientists, including the Natural History Museum's human origins expert Chris Stringer, are using the latest techniques on the Piltdown material, to reveal the hoaxer and add more concrete evidence to that which was collected over 50 years ago.

There are many suspects but the favourite is Charles Dawson, who was a solicitor and amateur fossil hunter. He 'found' pieces of a thick human-like skull in gravel beds at Piltdown in Sussex, and supposedly made further finds at a second site two miles away in 1915.

Science News: Early life forms may have been terrestrial

Controversial theory suggests early life forms were land-dwellers

Web edition: December 13, 2012

Some of the fossils celebrated as sea life's big breakout beyond mere soups and slimes might actually have dwelled on land, argues a controversial new study.

Named the Ediacaran fauna after Australia's Ediacara Hills, these creatures dating from roughly 575 million to 542 million years ago mark life finally growing beyond the microscopic. Found in some 30 locations around the world, Ediacarans grew in discs, fronds and other fairly simple shapes with a quilted look, and paleontologists usually consider them some sort of marine creatures.

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A new detailed analysis of the rocks where Australian Ediacarans are found suggests the rocks are fossilized soils, or paleosols, instead of a sea bottom, says Gregory Retallack of the University of Oregon in Eugene. The placement of fossils and tiny tubes in the rocks suggests to him that at least some of the Ediacarans actually lived in those soils instead of just washing up on them.

Discovery News: Animal's Body Preserved for 425 Million Years

Analysis by Jennifer Viegas

Thu Dec 13, 2012 11:16 AM ET

The remains of a tiny animal, preserved for 425 million years in rocks located in what is now the U.K., have just been discovered by an international team of researchers.

The creature -- related to crabs, lobsters and shrimp -- is an ostracod, or a type of crustacean sometimes known as seed shrimp. It represents a new species, Pauline avibella, in memory of the late wife of David Siveter, who led the research project.

The 0.4-inch-long animal was found, not only with its shell, but also with its soft parts -- body, limbs, eyes, gills and digestive system. Such well-preserved remains from that ultra prehistoric period are near unheard of in the fossil record.

Smithsonian Magazine: The Fungus in Your Cheese Is Having Weird Sex

Cheese is a pretty weird thing when you think about it. Someone had to come up with the idea of taking a bunch of milk, adding bacteria, letting it basically go bad, and waiting to eat it until mold had grown on it.

And, if that grosses you out, just wait. It turns out that the fungi in cheeses like blue cheese aren't just sitting there, waiting for you to eat them. They're getting it on.

More at The Secret Sex of Cheese on Nitty Gritty Science.

Scientific American: Reconstructed Face of Extinct "Hobbit" Species Is Startlingly Humanlike

Once upon a time a tiny human species with large feet shared the planet with our own kind. It hunted giant rats and miniature cousins of the elephant, defended its kills from monstrous storks and dodged fearsome dragons. This is not the plot of a lost Tolkien book. This really happened. I'm referring, of course, to our extinct relative Homo floresiensis, which lived on the island of Flores in Indonesia as recently as 17,000 years ago and has for obvious reasons been dubbed the hobbit. It turns out that despite the species' small size, it may have looked rather familiar, according to a scientific reconstruction.

Biodiversity

Science News: News in brief: Counting project reveals forest's bug diversity

Some 25,000 species of arthropods live in Panamanian forest

Web edition: December 13, 2012

An international effort has put together the first tally of all the species of butterflies, beetles, ants, bees, roaches and their

fellow arthropods that live in a tropical forest. And the count: 25,000.

Analyzing the count suggested possible short-cuts for estimating diversity, Yves Basset of the Smithsonian Tropical Research Institute in Panama and his colleagues report in the Dec. 14 Science. The best predictor of total arthropod species was the total plant species in the forest. Of course, then scientists have to count the plants.

Nature via Scientific American: King Crabs Poised to Wipe Out Rare Antarctic Ecosystem of Invertebrates

The crabs' arrival due to warming seas could deal a crushing blow to archaic species of starfish, sea spiders and ribbon worms at the Antarctic continental shelf

On a dim February evening, seven people crowded around a row of television monitors in a shack on the rear deck of the RV Nathaniel B. Palmer. The research icebreaker was idling 30 kilometers off the coast of Antarctica with a cable as thick as an adult's wrist dangling over the stern. At the end of that cable, on the continental shelf 1,400 meters down, a remote-operated vehicle (ROV) skimmed across the sea floor, surveying a barren, grey mudscape. The eerie picture of desolation, piped back to the television monitors, was the precursor to an unwelcome discovery.

The ROV had visited 11 different sea-floor locations during this 57-day research cruise along the Antarctic Peninsula in 2010. Each time, it had found plenty of life, mostly invertebrates: sea lilies waving in the currents; brittlestars with their skinny, sawtoothed arms; and sea pigs, a type of sea cucumber that lumbers along the sea floor on water-inflated legs. But at this spot, they were all absent. After 15 minutes, the reason became clear: a red-shelled crab, spidery and with a leg-span as wide as a chessboard, scuttled into view of the ROV's cameras. It probed the mud methodically — right claw, left claw, right claw — looking for worms or shellfish. Another crab soon appeared, followed by another and another. The crowded shack erupted into chatter. “They're natural invaders,” murmured Craig Smith, a marine ecologist from the University of Hawaii at Manoa. “They're coming in with the warmer water.”

Cold temperatures have kept crabs out of Antarctic seas for 30 million years. But warm water from the ocean depths is now intruding onto the continental shelf, and seems to be changing the delicate ecological balance. An analysis by Smith and his colleagues suggests that 1.5 million crabs already inhabit Palmer Deep, the sea-floor valley that the ROV was exploring that night (see 'A warming welcome'). And native organisms have few ways of defending themselves. “There are no hard-shell-crushing predators in Antarctica,” says Smith. “When these come in they're going to wipe out a whole bunch of endemic species.”

By Douglas Fox and Nature magazine

Scientific American: Mole Rats Promote Biodiversity

Mole rats may not be pretty, but their mounds of dirt are crucial for biodiversity

Mole rats—known for their small eyes, grublike bodies and sometimes naked skin—mostly live underground. Yet they seem to dramatically affect aboveground ecological processes. A recent report in the Journal of Zoology showed that the burrowing activity of mole rats strongly influences the composition of plant communities in one of Africa's biodiversity hotspots, the Cape fynbos region in South Africa.

In the process of excavating their burrows, mole rats churn soil together with vegetation, uneaten food, and their own urine and feces. They then eject this blend of organic and inorganic matter from their burrow, forming characteristic mounds.

Scientific American: New Toxic Nocturnal Primate Species Discovered

EPA & Hydraulic Fracturing - Dec. 15 to 20

The slow loris shouldn't be a difficult object of study. For one thing, it's slow—very slow (think sloth slow). And these small primates, which are unique in possessing a toxic bite to ward off predators, are charismatic due in large part to their compelling, wide-eyed faces. But they are also nocturnal, and they tend to live in hard-to-reach places, such as the rainforests of Borneo. Which might be why until recently, scientists had lumped all the slow lorises (Nycticebus) into just two species.

Currently, three more species—including the Bornean loris (N. menagensis)—and many more subspecies of this omnivore are recognized. Now a new research effort has discovered three distinct species within the formerly singular Bornean loris species. The project also uncovered one entirely new species, which has even "longer, fluffier body hair," the team of researchers noted in the study describing the find, which was published online December 13 in the American Journal of Primatology.

Also read Three New Slow Loris Species Discovered in Borneo; Rare Venomous Primates Threatened by Illegal Pet Trade.

Science News: Feces study gets the poop on gorillas' diet

Chemical traces in animals' droppings reflect recent shifts in food consumption

Web edition: December 10, 2012

Chemical signatures in a gorilla's feces reveal a lot about short-term changes in its diet, a new study finds.

What an animal eats tells scientists how it survives in its habitat and adapts to environmental changes. But observing animals dining in the wild isn't always practical. Now, researchers have tracked monthly shifts in the diets of wild mountain gorillas by measuring different forms of carbon in the animals' feces.

Researchers monitored eastern gorillas (Gorilla beringei) in the Bwindi Impenetrable National Park in southwestern Uganda over a 10-month period from 2002 to 2003, collecting the apes' scat and samples of the animals' favorite foods — leaves, fruit, fruit peels and wood.

Biotechnology/Health

Michigan State University: Researcher helps set agenda for global health

A Michigan State University professor is among the lead authors of the largest-ever study of the global distribution and causes of many major diseases, injuries and health risk factors.

Published today in a special issue of The Lancet, the Global Burden of Disease Study 2010 involved nearly 500 authors in 50 countries studying the worldwide impact of more than 200 health conditions.

Gretchen Birbeck, professor of neurology and epidemiology in MSU's College of Osteopathic Medicine, led the portion of the study focused on epilepsy, Parkinson's disease, multiple sclerosis and headaches.

University of Michigan: Capturing circulating cancer cells could provide insights into how disease spreads

ANN ARBOR—A glass plate with a nanoscale roughness could be a simple way for scientists to capture and study the circulating tumor cells that carry cancer around the body through the bloodstream.

Engineering and medical researchers at the University of Michigan have devised such a set-up, which they say takes

advantage of cancer cells' stronger drive to settle and bind compared with normal blood cells.

Circulating tumor cells are believed to contribute to cancer metastasis, the grim process of the disease spreading from its original site to distant tissues. Blood tests that count these cells can help doctors predict how long a patient with widespread cancer will live.

Climate/Environment

Reuters via Scientific American: Human link to climate change stronger than ever: draft report

By Nina Chestney and Alister Doyle

LONDON (Reuters) - International climate scientists are more certain than ever that humans are responsible for global warming, rising sea levels and extreme weather events, according to a leaked draft report by an influential panel of experts.

The early draft, which is still subject to change before a final version is released in late 2013, showed that a rise in global average temperatures since pre-industrial times was set to exceed 2 degrees Celsius by 2100, and may reach 4.8 Celsius.

"It is extremely likely that human activities have caused more than half of the observed increase in global average surface temperatures since the 1950s," the Intergovernmental Panel on Climate Change (IPCC) draft report said.

"Extremely likely" in the IPCC's language means a level of certainty of at least 95 percent. The next level is "virtually certain", or 99 percent, the greatest possible certainty for the scientists.

Reuters via Scientific American: Drought Expands in Many Farm States

(Reuters) - Drought continued to expand through many key farming states within the central United States in the past week, as scattered rainfall failed to replenish parched soils, according to a report issued Thursday by state and federal climatology experts.

Drought conditions were most pervasive in the Plains states, including in top wheat producer Kansas, according to the Drought Monitor report.

Fully 100 percent of Kansas was in at least "severe" drought as of Tuesday, up from 99.34 percent a week earlier, according to the Drought Monitor, and almost 78 percent remained in at least "extreme drought," the second-worst level of drought.

Overall, roughly 61.87 percent of the contiguous United States was in at least "moderate" drought, a slight improvement from 62.37 percent a week earlier.

The portion of the contiguous United States under at least "severe" drought expanded, however, to 42.59 percent from 42.22 percent.

Geology

LiveScience: Drought May Have Killed Sumerian Language

Tia Ghose, LiveScience Staff Writer

EPA & Hydraulic Fracturing - Dec. 15 to 20

SAN FRANCISCO — A 200-year-long drought 4,200 years ago may have killed off the ancient Sumerian language, one geologist says.

Because no written accounts explicitly mention drought as the reason for the Sumerian demise, the conclusions rely on indirect clues. But several pieces of archaeological and geological evidence tie the gradual decline of the Sumerian civilization to a drought.

The findings, which were presented Monday (Dec. 3) here at the annual meeting of the American Geophysical Union, show how vulnerable human society may be to climate change, including human-caused change.

Psychology/Behavior

Scientific American: How Communities Shape Our Morals

Nazis did not just blindly follow orders

In last month's column I recounted how my replication of Stanley Milgram's shock experiments revealed that although most people can be inveigled to obey authorities if they are asked to hurt others, they do so reluctantly and with much moral conflict. Milgram's explanation was an "agentic state," or "the condition a person is in when he sees himself as an agent for carrying out another person's wishes." As agents in an experiment, subjects shift from being moral agents in society to obedient agents in a hierarchy. "I am forever astonished that when lecturing on the obedience experiments in colleges across the country, I faced young men who were aghast at the behavior of experimental subjects and proclaimed they would never behave in such a way but who, in a matter of months, were brought into the military and performed without compunction actions that made shocking the victim seem pallid."

This is an astute observation because research on the motivation of soldiers during combat—well summarized by Lt. Col. Dave Grossman in his deeply insightful book On Killing (Little, Brown, 2009)—reveals that a soldier's primary motivation is not politics and ideology but devotion to his band of brothers. "Among men who are bonded together so intensely," Grossman explains, "there is a powerful process of peer pressure in which the individual cares so deeply about his comrades and what they think about him that he would rather die than let them down."

As a social primate species, we modulate our morals with signals from family, friends and social groups with whom we identify because in our evolutionary past those attributes helped individuals to survive and reproduce. We do not just blindly concede control to authorities; instead we follow the cues provided by our moral communities on how best to behave.

Science News: What goes wrong when talks break down

Nonlinear analysis explains how negotiations often fail

Web edition: December 12, 2012

SANTA FE, N.M. — Sometimes negotiations appear to be going all right — and then somebody assassinates the High Peace Council chairman. A new way of simulating how groups make decisions combines social psychology and nonlinear mathematics, revealing how forces may unexpectedly conspire to send negotiations off the rails.

The approach captures the unpredictable nature of group decision making and might be used to predict which members of a jury, legislature or corporate board will be supporters or dissenters of a policy, or if consensus is even possible. It may also help explain how Burhanuddin Rabbani, a key figure in negotiations between the Afghan government and the

EPA & Hydraulic Fracturing - Dec. 15 to 20

Taliban, ended up the victim of a suicide bomber in September 2011.

Many methods for assessing how negotiations unfold assume a linear, relatively predictable relationship between the group members' opinions, their influence on each other and the outcome of the negotiations. These methods can work well for small groups, says policy analyst Hilton Root of George Mason University in Arlington, Va. "But," he said, "there's a lot you can't do with them."

Science News: Brain stimulation alters depressive symptoms in mice

Findings may point the way toward treatment in people

Web edition: December 12, 2012

Signs of depression can be turned on and off in mice with the flip of a switch. Activating or silencing the behavior of certain brain cells with laser light causes the animals to change their depressive behavior, two new studies find.

Although the experiments were done in rodents, the results have direct relevance to human depression, says neurologist Helen Mayberg of the Emory University School of Medicine in Atlanta. The new work may point out places in the human brain that doctors can similarly stimulate to treat depression.

The results, published online December 13 in Nature, took advantage of a technique called optogenetics, which allows scientists to control nerve cell behavior with a tiny fiber-optic light. In the studies, mice were genetically engineered to harbor nerve cell proteins that respond to light. The researchers could make certain nerve cells fire off messages by shining blue light, and quiet them by shining yellow light.

Scientific American: How Do You Play with Your Dog?

Millions of people around the world come home to four legs and a wagging tail, and many spend some of their time together playing. While dog-dog play has been studied extensively, dog-person play, which takes on a different form and appears to have different rules, has not attracted nearly as much scholarly attention. At the Horowitz Dog Cognition Lab in NYC, we are investigating the different ways people and dogs play together and the behaviors they use. And, we need your help (well, you and your dog's help).

Archeology/Anthropology

Health 24: When our ancestors left Africa questioned

Created: Friday, December 14, 2012

New research by a University of Alberta archaeologist may lead to a rethinking of how, when and from where our ancestors left Africa.

U of A researcher and anthropology chair Pamela Willoughby's explorations in the Iringa region of southern Tanzania yielded fossils and other evidence that records the beginnings of our own species, Homo sapiens. Her research, recently published in the journal Quaternary International, may be key to answering questions about early human occupation and the migration out of Africa about 60 000 to 50 000 years ago, which led to modern humans colonising the globe.

From two sites, Mlambalasi and nearby Magubike, she and members of her team, the Iringa Region Archaeological Project, uncovered artifacts that outline continuous human occupation between modern times and at least 200,000 years ago, including during a late Ice Age period when a near extinction-level event, or "genetic bottleneck," likely occurred.

EPA & Hydraulic Fracturing - Dec. 15 to 20

Agenzia Nazionale Stampa Associata--ANSA (Italy): Researchers find evidence of early man in caves near Naples

Remains of both Neanderthals and Homo sapiens in same caves

(ANSA) - Rome, December 4 - Researchers are poring over thousands of tiny artifacts - including a child's milk tooth - found in a southern Italian cave that appears to have been shared by both Neanderthals and early man.

The caves of Roccia San Sebastiano, which overlook the Tyrrhenian Sea north of Naples, are being combed for traces of those who once lived there.

Nature: Art of cheese-making is 7,500 years old

Neolithic pottery fragments from Europe reveal traces of milk fats.

Nidhi Subbaraman

Traces of dairy fat in ancient ceramic fragments suggest that people have been making cheese in Europe for up to 7,500 years. In the tough days before refrigerators, early dairy farmers probably devised cheese-making as a way to preserve, and get the best use out of, milk from the cattle that they had begun to herd.

Peter Bogucki, an archaeologist at Princeton University in New Jersey, was in the 1980s among the first to suspect that cheese-making might have been afoot in Europe as early as 5,500 bc. He noticed that archaeologists working at ancient cattle-rearing sites in what is now Poland had found pieces of ceramic vessels riddled with holes, reminiscent of cheese strainers. Bogucki reasoned that Neolithic farmers had found a way to use their herds for more than milk or meat.

Discovery News: Iron Age Feast Found in England

Analysis by Jennifer Viegas

Remnants of an Iron-Age feast, including cattle skulls and 13 cauldrons, have been unearthed in Chiseldon, United Kingdom, according to a report in the latest British Archaeology

The discovery marks the largest grouping of early cauldrons ever found in Europe. One cauldron features a handle plate in the form of a cow's head; zoomorphic decoration is otherwise unknown on a British cauldron.

"Analysis of the interiors of the cauldrons has even revealed traces of animal fats, a tantalizing suggestion that these objects might have been used in cooking and serving meat-rich stews at Iron-Age feasts over 2,000 ago," Julia Farley, curator of European Iron Age collections at the British Museum, told Discovery News.

The Lane Report: UK archaeologists uncover lost communities in Italy

LEXINGTON, Ky. (Dec. 11, 2012) — Over the summer, a team of faculty and students from the University of Kentucky discovered evidence of not just one lost community, but two in northern Italy. Using their archaeological expertise and modern technology, data was collected indicating the existence of a Roman settlement and below that, a possible prehistoric site.

Many years ago, archaeologist and art historian Paolo Visonà, a native of northern Italy and adjunct associate professor of art history in the UK School of Art and Visual Studies at the UK College of Fine Arts, first learned of a possible ancient settlement from a farmer in Valbruna, near the village of Tezze di Arzignano. While working his family's land, Battista

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Carlotto had discovered artifacts that looked to Visonà like ceramics, mosaic, and glass of the Roman Empire.

Curiosity of what lay beneath the farmland was peaked in both gentlemen. With the approval of Carlotto and with little time to waste because of growing development in the area, Visonà began to research historical accounts of the region. Manuscripts found in Vicenza's Bertoliana Library confirmed Visonà's suspicion; in the late 18th century witnesses had shared accounts of seeing a Roman city's remains in the vicinity.

The Guardian (UK): Restoration of Roman tunnels gives a slave's eye view of Caracalla baths

Tourists will see 'maniacal Roman perfection and incredible hydraulic technology' in labyrinth under Rome's Caracalla baths

In the middle of a patch of grass amid the ruins of the Caracalla baths in Rome, there is a staircase that takes visitors deep into the ground to a world resembling the lair of a James Bond villain.

"This is our glimpse at maniacal Roman perfection, at incredible hydraulic technology," said archaeologist Marina Piranomonte, as she descended and waved at a network of high and wide tunnels, each measuring six metres (20ft) high and wide, snaking off into the darkness.

The baths, on a sprawling site slightly off the beaten track in a city crowded by monumental attractions, hold their own against the nearby Circus Maximus, its shattered walls standing 37 metres high, recalling its second century heyday when it pulled in 5,000 bathers a day.

University of Leicester (UK) via Science Daily: Ancient Drawings in Peruvian Desert: New Light On the Nazca Lines

Dec. 10, 2012 — Archaeologists gain insight into ancient desert drawings -- by walking them. The first findings of the most detailed study yet by two British archaeologists into the Nazca Lines -- enigmatic drawings created between 2,100 and 1,300 years ago in the Peruvian desert -- have been published in the latest issue of the journal Antiquity.

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Sofia Globe (Bulgaria): Archaeology: Basilica from the time of Constantine the Great found at Sofia's Serdica West Gate

Posted Dec 12 2012 by The Sofia Globe staff in Bulgaria, News

Archaeologists in Bulgaria's capital city Sofia have found a basilica said to date from the time of emperor Constantine the Great in the area of the West Gate of Serdica, as the city was known in Roman times.

The basilica is 27 metres wide and about 100m long, according to Yana Borissova-Katsarova, head of research at the site. It featured multi-coloured mosaics. Further exploration of the find will be difficult because of its location under the modern city.

Sofia deputy mayor in charge of culture, Todor Chobanov, said that the discovery of the basilica may be proof that Constantine intended to establish the city as a centre of Christianity.

Yorkshire Post (UK): Winter of discontent as we await the truth

In the New Year we'll learn if bones from a city car park really are those of Richard III. Michael Hickling reports on the

future for the last King of the House of York.

Published on Monday 10 December 2012 00:00

History is written by the victors, or most memorably in this case by one of the inheritors of the victors' story, William Shakespeare.

He created the Richard III we know, with a hump and a limp and a shrivelled arm, a character who gleefully confides to the theatre audience that he's so ugly dogs bark at him. He's a child murderer, a sexual predator, a psychopath crippled in mind and body. It's a magnificent creation. But Shakespeare had no first-hand knowledge of the man he wrote about.

His play Richard III was published just over a century after the naked body of this last Plantagenet monarch, newly-slain in battle at nearby Market Bosworth, was displayed at Leicester in the summer of 1485. To create his monstrous character, the playwright drew on unreliable sources which put a spin on scarce facts to suit the outlook of the victor of Bosworth, Henry Tudor and his successors.

Today there are people who still care about the injustice of it. Among them are the members of the Richard III Society who insist Richard was neither a ruthless opportunist nor horrible to look at.

The Independent (UK): Jewish philanthropist lost in the sands of time thanks to the Nazis

A wealthy patron who funded the excavation of the priceless Nefertiti bust was airbrushed from history. Now, a hundred years after the find, his story is finally being told

Tony Paterson

Berlin

She is regarded as the ancient world's equivalent to the Mona Lisa and this weekend the 3,400–year old bust of the Egyptian Queen Nefertiti will be the centrepiece of a grand exhibition in Berlin's Neues Museum, celebrating her discovery by German archaeologists exactly a century ago.

The delicately featured and priceless bust of the wife of the ancient Egyptian Sun King Akhenaten has been one of the highlights of Berlin's museum collection since it was first put on display in the city in 1923.

It was unearthed by the famous German archaeologist Ludwig Borchardt, at Amarna in 1912. He became a household name in Germany but few know the story of the wealthy Jewish patron and philanthropist who not only funded the excavation work that led to the bust's discovery but also donated Nefertiti and scores of other ancient Egyptian artefacts he owned to Berlin's museums. Organisers of the centenary celebrations are hoping to change that. James Simon is buried in Berlin's Jewish cemetery. The wealthy Berlin businessman and patron of the arts was a member of the capital's thriving pre-Second World War Jewish community. There is little doubt that without his passion for the arts and ancient history, Nefertiti would not be one of the city's foremost attractions, viewed by half a million visitors a year.

Hat/Tip to annetteboardman, who sent in the above articles.

Physics

Scientific American: Relative Masses of 7-Billion-Year-Old Protons and Electrons Confirmed to Match Those of Today's Particles

EPA & Hydraulic Fracturing - Dec. 15 to 20

The mass of the proton in relation to its much lighter counterpart, the electron, is known to great precision: the proton has 1836.152672 times the mass of the electron. But has it always been so?

Quite possibly, according to new research which taps the cosmos as a vast fundamental-physics laboratory. A study of a distant galaxy strongly suggests that the proton-to-electron mass ratio, denoted by the Greek letter mu (μ), has remained essentially constant for at least half the age of the universe. The findings appeared online December 13 in Science.

Chemistry

Wayne State University: Two Wayne State University chemistry professors named AAAS fellows

DETROIT—Stephanie Brock, Ph.D. of Ferndale, and Arthur Suits, Ph. D. of Ann Arbor, professors of chemistry in the College of Liberal Arts and Sciences at Wayne State University, have been named Fellows of the American Association for the Advancement of Science (AAAS). Election as an AAAS Fellow is an honor bestowed upon AAAS members by their peers.

This year 702 members have been awarded this honor by AAAS because of their scientifically or socially distinguished efforts to advance science or its applications. New Fellows will be presented with an official certificate and a gold and blue (representing science and engineering, respectively) rosette pin on Saturday, 16 February from 8 to 10 a.m. at the AAAS Fellows Forum during the 2013 AAAS Annual Meeting in Boston, Mass.

This year's AAAS Fellows were formally announced in the AAAS News & Notes section of the journal Science on Nov. 30, 2012.

Energy

National Geographic News: Who's Watching? Privacy Concerns Persist as Smart Meters Roll Out

Christina Nunez

For National Geographic News

Published December 12, 2012

Energy consultant Craig Miller, who spends much of his time working to make the smart grid a reality, got a jolt when he mentioned his work to a new acquaintance. The man, who happened to be a lineman at a Pennsylvania utility, responded earnestly: "Smart meters are a plot by Obama to spy on us."

The encounter was a disheartening sign of the challenge ahead for proponents of the smart grid, who say that the technology can help the industry meet power demand, fix problems faster, and help consumers lower their electricity bills. Advocates of such a 21st-century grid are learning that they need to take privacy concerns seriously. Though smart meters are not, in fact, a domestic espionage scheme, they do raise questions: In a world where households start talking with the power grid, what exactly will be revealed? And who will be listening?

National Geographic News: Waste Wattage: Cities Aim to Flush Heat Energy Out of Sewers

Rachel Kaufman

For National Geographic News

EPA & Hydraulic Fracturing - Dec. 15 to 20

Published December 11, 2012

Shower drains and dirty dishwater and laundry water could be on the cutting edge of energy efficiency and recovery.

Around the world, and more recently in the U.S., cities are realizing that the water leaving our homes and offices—specifically, warm and hot wastewater—is an astoundingly powerful source of energy. One estimate is that Americans flush 350 billion kilowatt-hours of energy into the sewers each year—roughly enough to power 30 million U.S. homes. Cities are taking notice, and taking steps to install sewage heat recovery systems to get a piece of that energy resource.

"I never thought I'd be saying the words that 'Sewage heat recovery is the coolest thing,'" said Jessie Israel, resource recovery manager at King County's Wastewater Treatment Division.

National Geographic News: U.K. Dash for Shale Gas a Test for Global Fracking

Thomas K. Grose in London

For National Geographic News

Published December 10, 2012

The starting gun has sounded for the United Kingdom's "dash for gas," as the media here have dubbed it.

A moratorium on shale gas production was lifted Thursday. And plans to streamline and speed the regulatory process through a new Office for Unconventional Gas and Oil were unveiled last week in the annual autumn budget statement by the chancellor of the exchequer, George Osborne.

In the U.K., where all underground mineral rights concerning fossil fuels belong to the crown, hydraulic fracturing, or fracking, could unlock a new stream of government revenue as well as fuel. But it also means that there is no natural constituency of fracking supporters as there is in the United States, birthplace of the technology. In the U.S., concerns over land and water impact have held back fracking in some places, like New York, but production has advanced rapidly in shale basins from Texas to Pennsylvania, with support of private landowners who earn royalties from leasing to gas companies.

Science, Space, Environment, and Energy Policy

The Guardian (UK): Turkey turns to human rights law to reclaim British Museum sculptures

Campaigners are going to European court in attempt to repatriate artefacts created for the Mausoleum of Halicarnassus

Human rights legislation that has overturned the convictions of terrorists and rapists could now rob the British Museum of sculptures created for one of the seven wonders of the ancient world.

A Turkish challenge in the European court of human rights will be a test case for the repatriation of art from one nation to another, a potential disaster for the world's museums.

Despite criticism of their own country's human rights record, Turkish campaigners are turning to human rights law – a dramatic move to reclaim sculptures that once adorned the Mausoleum of Halicarnassus, an ancient wonder along with sites such as the hanging gardens of Babylon and Egypt's pyramids.

Greek sculptors in 350BC created a 40-metre-high monument, crowned by a colossal four-horse chariot on a stepped

pyramid. A magnificent horse's head is among sculptures acquired by the British Museum in the mid-19th century, which campaigners want returned to their original site – Bodrum in south-west Turkey.

The Guardian (UK): Israeli separation wall threatens Battir's ancient terraces

Israeli environmentalists and even the state parks authority are backing Palestinian villagers' attempts to preserve landscape that is expected to be declared world heritage site by Unesco

The future of an ancient agricultural landscape, incorporating extensive stone-walled terraces and a unique natural irrigation system, could be decided on Wednesday when a petition against the planned route of Israel's vast concrete and steel separation barrier is heard by the high court.

The terraces of the Palestinian village of Battir, near Bethlehem, are expected to be declared a world heritage site by Unesco, the United Nations' cultural body, in the coming months.

But, Friends of the Earth, which filed the petition, says Israel's decision to construct the West Bank barrier through a valley running between the terraces threatens to inflict irreversible harm to the landscape.

The case has been bolstered by a last-minute U-turn by Israel's nature and parks authority, which called on the court on Tuesday to accept the petition, saying the "special and valuable area" should be protected in the public interest. The authority argued there was no longer an emergency security environment requiring environmental considerations to be cast aside.

The Georgetown Dish: Archaeological Work Delays Plan for Georgetown Home

Tipped off by a local author, the city is now digging into the history of the Georgetown property owned by prominent freed slave Yarrow Mamout in the early 1800s.

City archaeologists intend to survey the property at 3324 Dent Place within the next few weeks, putting a planned redevelopment project on hold.

“There’s a lot of interest in it,” said archaeologist Ruth Trocolli of the D.C. Historic Preservation Office, who plans to do a “reconnaissance” mission at the property in northern Georgetown. “If there are intact archaeological remains, or maybe even human remains,” Trocolli said, the investigation could grow.

Local writer James H. Johnston, who published a book about Yarrow Mamout this year, alerted archaeologists to the land’s historical significance. He’s been closely following the redevelopment plans for 3324 Dent Place after a new owner purchased the blighted house there last spring and later proposed razing and replacing it.

Hat/Tip to annetteboardman for these stories.

Scientific American: Meal Thicket: Students Balk at New School Lunch Nutrition Standards

Lunch strikes, Facebook protest pages, Twitter campaigns, YouTube parodies and other means have been utilized to voice opposition to the healthier meals

Indeed, some 31 million American kids participating in the federally supported National School Lunch Program have been getting more whole grains, beans, fruits and vegetables in their diets—whether they like it or not. The change is due to new school meal standards unveiled by the U.S. Department of Agriculture (USDA) last January, per the order of 2010’s Healthy, Hunger-Free Kids Act. The new standards are based on the Institute of Medicine’s science-based

recommendations, and are the first upgrade to nutritional standards for school meals since 1995 when low- and no-fat foods were all the rage.

The non-profit Environmental Working Group (EWG) believes the new standards represent an important milestone in efforts to improve the dietary habits and health of increasingly obese American kids. "Schools' misguided reliance on processed foods for speedy, low-labor cost production, industry's $1.6 billion in child-targeted advertising and a lack of faith in our children's dietary curiosity [have] created a generation of 'picky eaters' with dull palates," reports the group. "With nearly 17 percent of America's children now clinically obese and a staggering 32 percent overweight, the time is long past to address the unhealthy food environments our children live in."

The new standards limit calories per meal to 850 for high school meals, 700 for middle school and 650 for elementary and more than double the mandated minimum servings of fruits and vegetables while reducing the sodium, saturated fats and trans fats in school kids' diets. Whole-grain foods, beans and dark green and orange vegetables such as broccoli, spinach, carrots and sweet potatoes have replaced things like pizza and French fries as staple items in schools that follow the program.

Reuters via Scientific American: EPA Finalizes Stricter Soot Pollution Limits

WASHINGTON (Reuters) - The Obama administration on Friday tightened limits on harmful soot pollution from sources including power plants, diesel engines and burning wood.

The new standards, which the Environmental Protection Agency was under court order to finalize, limit annual average soot emissions by the end of decade to about 12 micrograms per cubic meter of air from the standard of 15 micrograms set in 1997.

Individual states will be responsible for deciding how to cut emissions of the fine particulates, which can lodge deep in the lungs and threaten the elderly, people with heart disease and children. Health problems associated with the pollution include premature death, acute bronchitis, and asthma.

Reuters via Scientific American: Montana governor: Oil and gas boom could fund clean energy

WASHINGTON (Reuters) - Montana Governor Brian Schweitzer, who been an advocate of the recent oil and gas boom that could upend U.S. energy policy, says he will keep spreading his message when he leaves office.

Schweitzer, whose tenure as governor will end next month due to state term limits, said the wave of drilling across his state could be a model of how to eliminate the nation's dependence on foreign fuel - if lawmakers would just get out of the way.

"Those SOBs out there," he said. "They got $60 mouths and $2 ears."

Reuters via Scientific American: California Planning Low-Carbon Oasis Where Cars Aren't King

By Braden Reddall and Rory Carroll

NEWARK, California (Reuters) - Vacant industrial land near salt marshes and a derelict rail bridge seem like an odd setting for the beginnings of a lifestyle revolution in scenic California, but planners in the San Francisco Bay suburb of Newark view it as just that.

With an eye on the state's new land-use laws to cut carbon output, Newark's city council just voted to convert 200 acres owned largely by chemical companies into a development that should set the trend for a state bent on decarbonizing its

economy, the world's ninth largest.

The marshes could be turned over to birds, satisfying environmentalists, or paved over with single family homes, like most of the Bay Area.

Newark planners envision something different, which might satisfy both - or neither: 2,500 new homes, mostly townhouses and apartments, built within walking distance of stores and schools and connected by a new train to jobs across the Bay.

Reuters via Scientific American: Lawmakers to push tax code change for renewable energy in 2013

WASHINGTON (Reuters) - A group of U.S. lawmakers said on Wednesday that they plan to push ahead in the new year to change the tax code so renewable energy projects could qualify for beneficial tax structures commonly used by pipelines and other energy-related companies.

Democratic and Republican sponsors of proposed legislation said they think momentum is growing for their idea to allow wind, solar, biofuel and other renewable projects to structure as "master limited partnerships" (MLPs).

The structures allow companies to raise money in the stock market, while having income taxed only at the unit holder level, thus avoiding corporate income taxes.

"Small tweaks to the tax code could attract billions of dollars in private sector investment to renewable energy deployment," the 29 lawmakers said in a letter to President Barack Obama, asking for the administration's support.

Science Education

University of Michigan: U-M student winners of Dow sustainability award named

ANN ARBOR—Energy efficiency and water purification projects earned top University of Michigan honors in the 2012 Dow Sustainability Innovation Student Challenge Award.

Teams of master's students representing the School of Natural Resources and Environment, the College of Engineering and the Stephen M. Ross School of Business won first and second prizes for U-M. Graduate students from 17 universities on five continents participated in this year's event. The competition concluded on Dec. 6 with a global webcast and live chat among all participating universities and winning students.

The Dow Sustainability Innovation Student Challenge Award, known as SISCA, is a global competition to generate inventive and interdisciplinary ideas for sustainability and is sponsored by Dow Chemical Co. This year at each university, first-place winners received $10,000 and runners-up earned $2,500.

Science Writing and Reporting

Scientific American: Do You Accept the Science of Climate Change? [Excerpt]

Some reject global warming science thanks to a misinformation campaign funded by fossil-fuel companies

Editor's Note: Excerpted from A Newer World—Politics, Money, Technology, and What's Really Being Done to Solve the Climate Crisis, by William F. Hewitt.

A concerted, focused, and well-funded campaign of disinformation has been waged against climate change.

EPA & Hydraulic Fracturing - Dec. 15 to 20

This attempt to discredit the science, to instill a sense of doubt about the conclusiveness and the extent of the agreement within the scientific community, is a story well told by Naomi Oreskes and Erik Conway in Merchants of Doubt. Oreskes looked at 928 — 10 percent — of all the papers published on climate change in peer-reviewed science journals over a ten -year period. She chose the 928 papers at random. Not one disputed the view that manmade greenhouse gases (GHGs) were causing a catastrophic environmental crisis.

Greenpeace, for one, has published well-documented reports on the funding for climate change denial by ExxonMobil and Koch Industries, among others. Journalists James Hoggan and Ross Gelbspan have also done considerable spadework in uncovering the campaigns mounted by fossil fuel special interests to discredit climate science. Hoggan writes, for instance, that "it's a story of deceit, of poisoning public judgment — of an anti-democratic attack on our political structures and a strategic undermining of the journalistic watchdogs who keep our social institutions honest."

Science News: BOOK REVIEW: Mirror Earth: The Search for Our Planet's Twin

Review by Sid Perkins

Web edition: December 13, 2012

In a fascinating chronicle of camaraderie and competition, Lemonick profiles the prominent researchers in an astronomical discipline that is coming of age. He follows the twists and turns in their careers as well as the towering hurdles they faced and ultimately solved — including oft-denied funding requests and the equally daunting search for respect among scientific peers.

At first, researchers could discern only exceptionally large planets closely orbiting small stars. But techniques used to detect exoplanets are becoming more and more sensitive, and scientists may be getting close to discovering a mirror Earth — a find that might be revealed within months, not years, Lemonick contends.

Science is Cool

Mashable: Mysterious Package Addressed to Indiana Jones Arrives at UChicago

Eric Larson

Grab hold of your thinking fedoras, everyone -- it's mystery solving time.

The University of Chicago received a bizarre package on Tuesday (pictured above) addressed to a "Henry Walton Jones, Jr." At first, nobody thought twice about it. Whatever, they figured, we get the wrong mail all the time.

But then it clicked. This wasn't just any "Jones" the sender was hoping to reach. This was the whip-snapping, Nazi-fighting, Holy Grail-hunting legend of a professor himself: the Indiana Jones.

The University of Chicago has more at its Tumblr.

Science News: Dear Future Earthlings

A message in a bottle won't be enough to communicate with distant generations

Print edition: December 15, 2012; Vol.182 #12 (p. 26)

EPA & Hydraulic Fracturing - Dec. 15 to 20

When Geoffrey Chaucer wrote The Canterbury Tales, he probably didn't think much about the students who would painstakingly slog through the text hundreds of years later. This literary classic is loaded with references and expressions specific to its author's time — part of what makes it so difficult to read, even with CliffsNotes to serve as a decoder ring.

Likewise, people of the future will no doubt face tremendous challenges interpreting the texts of today. Far enough forward in time, it won't just be an issue of literary style. To be understandable tens of thousands of years from now, ideas must be expressed in a language that lasts and stored in a form that can survive millennia.

Storytellers may be willing to take their chances. But for others, leaving notes for the future is a task of great concern. Whether passing along a basic understanding of biology, documenting historical events or clueing future generations in to potential hazards, scholars believe some messages are imperative to convey. These forward thinkers have long been interested in designing messages that can be read and understood by people as unknowable to present-day generations as present-day generations would have been to Chaucer, or even the Neandertals.

EPA & Hydraulic Fracturing - Dec. 15 to 20

What Could Go Wrong for U.S. Energy in 2013?
DailyFinance

12/15/2012

Posted 2:53PM 12/11/12 Posted under: Investing

We appear to be leaving 2012 amid an atmosphere of unusual tranquility for our domestic energy industry. With crude prices having remained relatively steady of late, natural gas levies sliding once again, and pain at the pump diminishing for drivers, it's as if we no longer have any significant energy woes to contend with.

Are we apt to sail through 2013 in a similarly uneventful state? Maybe, but also maybe not.

Stepping on the gas

For starters, as The Wall Street Journal noted not long ago, now that our quadrennial presidential election is behind us, it's hard to anticipate a perpetuation of the recent regulatory calm from the newly muscular Environmental Protection Agency. The Journal said in a late November opinion piece that "... EPA chief Lisa Jackson has the run of the place." One potential result noted by the paper could be the setting of greenhouse gas standards for planned new power plants at such a restrictive level that their construction will actually be thwarted.

Perhaps even more important from my perspective is the prospect that the agency will use next year to tighten the federal regulatory clamps on hydraulic fracturing, or fracking. This, of course, wouldn't be a new initiative. Back in April, when the EPA issued the final rule for fracking operations, it appeared sufficiently onerous from an industry perspective that the Washington, D.C.-based Institute for Energy Research said: "Once again, the Obama administration is using the (EPA) to execute its war on affordable energy."

As I've told Fools, there's a Hollywood flick about fracking called Promised Land waiting in the wings for release later this month. While I'm hardly certain that the Matt Damon film will take shots at the safety inherent in fracking, neither am I willing to bet many shekels that it won't. An anti-fracking tilt in theaters around the country would, of course, tend to invigorate those who believe that the EPA should push state-by-state regulation of fracturing aside and implement far more severe federal strictures in its place.

Unfortunately for those of us who believe that fracking warrants regulation -- albeit not at the federal level -- that's a creep that I expect to progress during the coming year anyway. It's also one that clearly wouldn't inure to the benefit of the likes of Chesapeake Energy , Halliburton and even ExxonMobil .

Pipeline's potential permit

Then there's the issue of either permitting or blocking the Keystone XL pipeline, which TransCanada would like to build to transfer crude from both the tar sands of Alberta and the Bakken Shale of North Dakota to refineries near the Gulf of Mexico. As you know, construction of the line has been blocked by the president, but, following the submission of a supposedly more environmentally palatable route, a new decision on whether to permit it is being awaited.

The betting is generally for an imprimatur for the line, but I'm not so sure. Environmental groups remain firmly "agin" it, and they continue to hold lots of sway with the administration. For now it's a wait-and-see issue for our citizenry and, frankly, for our relationship with our neighbors to the north.

A slippery slide

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Beyond those two well-known issues, John Hofmeister, the erstwhile head of Royal Dutch Shell's U.S. operations is less upbeat about the staying power of our positive energy circumstances. For starters, he's convinced that the energy industry is overly optimistic vis-a-vis the decline rates for shale fields. If he's right, our newly heightened unconventional oil and gas production will fall off faster than is expected. Indeed, we'd likely begin to see some evidence of this trend next year.

The obvious way to counter the steeper than anticipated falloff would be to drill significantly more wells than are currently projected. But Hofmeister points out that the industry currently has nowhere near the infrastructure to accommodate such increased drilling. In fact, he also says that we're lacking in a sufficiency of pipelines -- the pending decision on Keystone notwithstanding -- to transport crude efficiently from the fields to the refineries.

Foolish takeaway

These, of course, are all domestic considerations. They don't really take into account the current -- perhaps "unsettling" is a preferable term -- chaos in the Middle East and North Africa. Obviously, growing eruptions in such garden spots as Syria, Iran, Iraq, and Egypt could easily spread across the region and loft crude prices into the stratosphere. I'll talk about those geopolitical uncertainties in upcoming articles.

For now, despite our current calm relative to energy, there's at least a moderate possibility that 2013 could bring with it changed circumstances. On that basis alone, I urge Fools not to neglect energy companies as key components of their investment portfolios.

You'll note that Halliburton is mentioned in this article. Assuming a relative steadiness in the domestic oil and gas markets, investors would be wise to consider Halliburton, one of the top companies in the business, and one that is most in tune with the domestic market. To access The Motley Fool's new premium research report on this industry stalwart, simply click here now and learn everything you need to know about how Halliburton is positioning itself both at home and abroad.

The article What Could Go Wrong for U.S. Energy in 2013? originally appeared on Fool.com.

ADDEDLINK David Lee Smith has no positions in the stocks mentioned above. The Motley Fool owns shares of Halliburton Company and ExxonMobil and has the following options: long JAN 2013 $16.00 calls on Chesapeake Energy, long JAN 2014 $20.00 calls on Chesapeake Energy, long JAN 2014 $30.00 calls on Chesapeake Energy, and short JAN 2014 $15.00 puts on Chesapeake Energy. Motley Fool newsletter services recommend Halliburton Company. Try any of our Foolish newsletter services free for 30 days. We Fools may not all hold the same opinions, but we all believe that considering a diverse range of insights makes us better investors. The Motley Fool has a disclosure policy.

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Energy experts say drilling can be made cleaner
Daily Herald - Online

12/15/2012

PITTSBURGH In the Colorado mountains, a spike in air pollution has been linked to a boom in oil and gas drilling. About 800 miles away on the plains of north Texas, there s a drilling boom, too, but some air pollution levels have declined. Opponents of drilling point to Colorado and say it s dangerous. Companies point to Texas and say drilling is safe.

The answer appears to be that drilling can be safe or it can be dangerous. Industry practices, enforcement, geography and even snow cover can minimize or magnify air pollution problems.

It s like a vehicle. Some cars drip oil, said Russell Schnell, deputy director of the federal Earth System Research Laboratory in Boulder, Colo. You have wells that are absolutely tight. And you have other places where a valve gives out, and you have huge leaks.

The good news, nearly all sides agree, is that the technology exists to control methane gas leaks and other air pollution associated with drilling. The bad news is that the industry is booming so rapidly that some companies and some regulators can t seem to get ahead of the problems, which could ultimately cost billions of dollars to remedy.

The worries about what drilling does to the air are both global and local, with scientists concerned about the effects on climate change as well as the possible health consequences from breathing smog, soot and other pollutants.

Hydraulic fracturing, or fracking, has made it possible to tap into deep reserves of oil and gas but has also raised concerns about pollution. The industry and many federal and state officials say the practice is safe when done properly, but environmental groups and some scientists say there hasn t been enough research.

Some environmentalists say if leaks and pollution can be minimized, the boom has benefits, since gas burns much cleaner than coal, emitting half the carbon dioxide.

Al Gore told The Associated Press that it s not irresponsible to look at gas as a short-term substitute for coal-fired electricity. But Gore added that the main component of gas, methane, is a more potent heat-trapping greenhouse gas than CO2. That means that if large quantities leak, the advantage over coal disappears, the former vice president said.

In Colorado, the National Oceanic and Atmospheric Administration estimated that 4 percent of methane was leaking from wells, far more than previously estimated, and that people who live near production areas may be exposed to worrisome levels of benzene and other toxic compounds present in oil and gas.

Across the industry, the technology for stopping leaks can be as simple as fixing seals and gaskets, or it can involve hundreds of millions of dollars of new construction.

I think it s totally fixable, Schnell said. At least the bigger companies, they are really on top of this.

Gore added that when companies capture leaking methane, they end up with more to sell. So there s an economic incentive to capture it and stop the leaking, he said.

Another major source of worry is the industry s practice of burning off, or flaring, natural gas that comes out of the ground as a byproduct of oil drilling. Over the past five years, the U.S. has increased the amount of flared and wasted gas more

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than any other nation, though Russia still burns off far more than any other country.

In some places, energy companies haven t invested in the infrastructure needed to capture and process the gas because the oil is more valuable.

In the Bakken Shale oil fields of North Dakota, for example, about 30 percent of the natural gas is flared off because there aren t enough pipelines yet to carry it away. The amount of gas wasted in the state is estimated at up to $100 million a year. And officials in North Dakota said last month that the situation there might not be completely solved until the end of the decade.

NOAA scientists also say natural gas production has contributed to unusual wintertime smog in the West, particularly in regions surrounded by mountains, and especially in snowy areas.

Ozone, the main component in smog, typically forms when sunlight cooks a low-lying stew of chemicals such as benzene and engine exhaust. Normally, the process doesn t happen in cold weather.

But NOAA researchers found that when there s heavy snowfall, the sun passes through the stew, then bounces off the snow and heats it again on the way back up. In some cases, smog in remote areas has spiked to levels higher than those in New York or Los Angeles.

In open regions that are more exposed to wind, the ozone vanishes, sometimes within hours or a day. But in Utah basins it can linger for weeks, Schnell said.

Evidence that gas drilling air pollution can be managed but that more work may still need to be done comes from north Texas, where the shale gas boom began around Fort Worth about 10 years ago.

Mike Honeycutt, director of toxicology for the Texas Commission on Environmental Quality, said that in the early years of the boom, people complained about excessive pollution. Regulators started using special hand-held cameras to pinpoint pollution sources and found some sites with high levels of benzene and other volatile organic compounds.

It was a maintenance issue. They were in such a hurry, and they were drilling so fast, they were not being as vigilant as they should have been, Honeycutt said. So we passed new rules that made them take more notice.

Honeycutt said the cameras, which cost about $100,000 each, have revolutionized the way inspectors monitor sites. Texas has also installed nine 24-hour air monitoring stations in the drilling region around Fort Worth, and more are on the way. Now, he said, even as drilling has increased, summer ozone levels have declined.

In 1997 there were only a few hundred shale gas wells in the Fort Worth area and the summertime ozone level hit 104 parts per billion, far above the national standard then of 85. By 2012 the number of wells had risen to about 16,000, but preliminary results show the ozone level was 87 last summer.

There s still room for improvement, Honeycutt said, but the trend is clear, since the monitoring is no longer showing worrisome levels of benzene, either.

The Environmental Protection Agency isn t completely convinced. This year the federal agency cited Wise County in north Texas, a heavy gas drilling area, for violating ozone standards. Industry groups and the state have argued that the finding was based on faulty science.

So far, NOAA scientists say they haven t found signs that gas or oil drilling is contributing to a global rise in methane.

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Not the mid-latitudes where the drilling is being done, which is interesting, said James Butler, head of global monitoring for NOAA.

The EPA has passed new rules on oil and gas emissions that are scheduled to go into effect in 2015, and in 2012 it reached legal settlements that will require companies to spend more than $14 million on pollution controls in Utah and Wyoming. Colorado, Texas and other states have passed more stringent rules, too.

Carlton Carroll, a spokesman for the American Petroleum Institute, a lobbying group for the oil and gas industry, pointed out that many companies started developing the equipment to limit methane and other pollution before the EPA rule.

API is not opposed to controls on oil and gas operations so long as the controls are cost-effective, allow sufficient lead time and can be implemented safely, Carroll said in an email, adding that the industry has requested some technical clarifications to the rule and is working with EPA on those.

Prasad Kasibhatla, a professor of environmental chemistry at Duke University, said that controlling gas drilling pollution is technically solvable but requires close attention by regulators.

One has to demonstrate that it is solved, and monitored, he said.

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Statesman Journal - Online

12/15/2012

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Filed Under

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"We are here to listen to your comments, not to make any decisions," said the EPA's Karen Johnson at a community center hearing held on Dec. 10. Johnson and three other officials from EPA's Philadelphia office came to hear public comments on a proposed deep waste-water well proposed for a hilltop just outside the city of DuBois, a nearby town of about 8,000 people. They faced about 200 people interested in the prospects of their town becoming a place where thewaste water from some of the several thousand hydraulic fracturing wells now dotting the state would be forced under pressure into a hole in the ground some 7,300 feet deep, the proposed Zelman #1 injection well.

Here, the bill for America's energy boom might come due. Hydraulic fracturing, or "fracking", deep shale layers underneath Appalachia, Texas and other parts of the country produces natural gas, lots of it, enough to cut its price from $8 to $3 or less for a thousand cubic feet since 2008. Each fracking well can also produce hundreds of thousands of gallons of waste water, loaded with salt, chemicals and radionuclides from deep underground. That waste water can either be treated or dumped, and dumping it down a deep hole into a porous layer of limestone such as the one proposed for DuBois, is a cheaper option.

People at the meeting weren't very pleased with the prospect. "We're not here to have an argument," Johnson said to one man before the formal start of the hearing, who accused the EPA of "protecting big corporations making money off us," from the crowd. (Regularly depicted by critics as regulation-happy tree-huggers, the EPA officials at the hearing found themselves accused of protecting plutocrats from a crowd drawn from one of the most conservative parts of Pennsylvania.)

In June, a National Research Councilreport concluded that unlike fracking wells, deep-injection wells can pose a risk of causing earthquakes. A series of quakes in 2011 outside Youngstown, Ohio, tied to a disposal well culminated in a small temblor felt as far as DuBois, which forced that state to shut down the injection well. Unlike Ohio, Pennsylvania has only five such disposal wells already in operation, and none are right next to a town.

"Earthquakes are a legitimate concern in and around the well site," argued Randall Baird, a homeowner who lives on the street below the hilltop site of the proposed well. He echoed comments made by many people at the hearing. Many noted faults in the rock layers above the limestone intended for the disposal of the waste water.

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The basic way that injection wells are thought to trigger earthquakes is by putting fluids under pressure into contact with faults, essentially cracks running through rock layers, that tip them into buckling further. In the middle of a continent where there are usually few earthquakes, the crust is under tremendous pressure, Seeber says, "so just a little extra pressure can push faults to move unexpectedly." Sometimes, pressure from wells can take up to a decade to make their presence felt on a fault, he adds, long after the fluids were pumped underground.

The EPA issued a draft permit for the proposed injection well in April under safe drinking water regulations, Johnson reminded the crowd, so earthquakes by themselves weren't the agency's big concern as much as leaks from the well. Earthquakes aside, the town is honeycombed with coal mines and old gas wells that could be contaminated by the disposal well fluids, Baird and others contended, noting shafts within the well permit review area that run out to near the city's reservoir.

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In three decades of EPA regulation, no such injection well has ever ruptured, Johnson said. Why not put it somewhere farther away from a town then, suggested State Rep. Matt Gabler,who noted the rural state has plenty of more remote places.

It being central Pennsylvania, the rain outside had turned to snow by the time the meeting ended, and Johnson extended the public comment period to Dec. 17 to accommodate folks who needed to get home early. People shouted at times, and a state trooper watched the proceedings from the back of the room, but the meeting ended amicably enough. The agency is expected to decide on a final permit for the disposal well next year, after all the comments are considered.

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Daily News Journal - Online, The

12/15/2012

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by Dan Vergano

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Deep disposal well fight comes to small town
USA Today - Online

12/15/2012

Deep disposal well fight comes to small town

Dan Vergano

USA TODAY

@dvergano

8a.m. EST December 15, 2012

A signature battle of the energy boom, a public fight over a waste-water deep disposal well, plays out amid scientific uncertainty over safety in a small town.

A homeowner protest of a proposed waste water disposal well in DuBois, Pa. (Photo: Dan Vergano, USA TODAY)

Story Highlights

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A National Research Council report in June warned of earthquake risks from the deep wells

The hearing drew loud concern over disposal well safety near towns

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EPA official Karen Johnson speaks at a public hearing in Luthersburg, Pa. on Dec. 10. (Photo: USA TODAY)

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Daily World - Online, The

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Morning Sentinel - Online

12/15/2012

1:00 AM

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And look at this: According to the latest data released Oct. 14 by the United Kingdom's Meteorological Office, which with the University of East Anglia together comprise the U.N.'s official repository of climate data, after a rise in global temperatures from 1980 until 1996, there has been absolutely no net change in the succeeding 16 years despite continuing increases in carbon dioxide levels levels.

Of course, sooner or later, the needle will move -- but which way?

As the Bloomberg financial news site reported Nov. 8, "Human emissions of fossil carbon into the atmosphere and the resulting increase in temperatures may be holding off the next ice age, according to research from Sweden's University of Gothenburg."

The story added, "'We are probably entering a new ice age right now,' Lars Franzen, a professor of physical geography at the university, was cited as saying in an online statement. 'However, we're not noticing it due to the effects of carbon dioxide.'"

If you do believe rising carbon dioxide levels inevitably raise temperatures, holding continent-covering mile-thick ice sheets at bay would seem more important than worrying about a 2- or 3-degree rise in temperature, right?

But maybe we don't need to worry all that much.

Mostly because more natural gas is being used to generate power, an Environmental Protection Agency annual forecast just said U.S. carbon emissions will remain below 2005 levels until at least 2040.

Yet, the EPA is readying a host of emission regulations that will hit fossil-fuel generators hard, guaranteeing substantial increases in electricity rates across much of the country.

The rules accompany proposals in Congress for new carbon taxes. (You don't pay enough for gasoline and fuel oil now?)

Continuing to keep our air and water clean is a worthwhile goal, but these moves have almost nothing to do with that and very much to do with centralizing power in the hands of an ideologically committed green elite.

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